

# **Appendix B Planning Criteria/ Legislative Constraints**



The following is a list of major legal authorities relevant to BLM land use planning.

1. The Federal Land Policy and Management Act (FLPMA), as amended, 43U.S.C. 1701 et seq., provides the authority for BLM land use planning.
  - a. Sec. 102 (a) (7) and (8) and 103(c) sets the policy of the United States concerning the management of BLM lands.
  - b. Sec. 201 requires the Secretary of the Interior (the Secretary) to prepare and maintain an inventory of all BLM lands and their resource and other values; and, as funding and workforce are available, to determine the boundaries of the public lands, provide signs and maps to the public, and provide inventory data to State and local governments.
  - c. Sec. 202 (a) requires the Secretary, with public involvement, to develop, maintain, and when appropriate, revise land use plans that provide by tracts or areas for the use of the BLM lands.
  - d. Sec. 202 (c) (9) requires that land use plans for BLM lands be consistent with tribal plans and, to the maximum extent consistent with applicable Federal laws, with State and local plans.
  - e. Sec. 202 (d) provides that all public lands, regardless of classification, are subject to inclusion in land use plans, and that the Secretary may modify or terminate classifications consistent with land use plans.
  - f. Sec. 202 (f) and Sec. 309 (e) provide that Federal agencies, State and local governments, and the public be given adequate notice and an opportunity to comment on the formulation of standards and criteria for, and to participate in, the preparation and execution of plans and programs for the management of the public lands.
  - g. Sec. 302 (a) requires the Secretary to manage the BLM lands under the principles of multiple use and sustained yield, in accordance with, when available, land use plans developed under Sec. 202 of FLPMA, except that where a tract of BLM lands has been dedicated to specific uses according to any other provisions of law, it shall be managed in accordance with such laws.
  - h. Sec. 302 (b) recognizes the entry and development rights of mining claimants, while directing the Secretary to prevent unnecessary or undue degradation of the public lands.
  - i. Sec. 505(a) requires that "...each right-of-way shall contain terms and conditions which will ... minimize damage to the scenic and esthetic values..."
2. The National Environment Policy Act (NEPA), as amended, 42 U.S.C. 4321 et seq., requires the consideration and public availability of information regarding the environmental impacts of major Federal actions significantly affecting the quality of the human environment. This includes the consideration of alternatives and mitigation of impacts.
3. The Clean Air Act, as amended, 42 U.S.C. 7418, requires Federal agencies to comply with all Federal, State and local requirements regarding the control and abatement of air pollution. This includes abiding by the requirements of State Implementation Plans.
4. The Clean Water Act, as amended, 33 U.S.C. 1251, establishes objectives to restore and maintain the chemical, physical, and biological integrity of the Nation's water.
5. The Federal Water Pollution Control Act, 33 U.S.C. 1323, requires the Federal land manager to comply with all Federal, State, and local requirements, administrative authority, process, and sanctions regarding the control and abatement of water pollution in the same manner and to the same extent as any non-governmental entity.
6. The Safe Drinking Water Act, 42 U.S.C. 201, is designed to make the Nation's waters "drinkable" as well as "swimmable." Amendments establish a direct connection between safe drinking water, watershed protection, and management.
7. The Endangered Species Act (ESA), as amended, 16 U.S.C. 1531 et seq.:
  - a. Provides a means whereby the ecosystems upon which endangered and threatened

species depend may be conserved and to provide a program for the conservation of such endangered and threatened species (Sec. 1531 (b), Purposes).

b. Requires all Federal agencies to seek the conservation of endangered and threatened species and utilize applicable authorities in furtherance of the purposes of the Endangered Species Act (Sec. 1531 (c) (1), Policy).

c. Requires all Federal agencies to avoid jeopardizing the continued existence of any species that is listed or proposed for listing as threatened or endangered or destroying or adversely modifying its designated or proposed critical habitat (Sec. 1536(a), Interagency Cooperation).

d. Requires all Federal agencies to consult (or confer) in accordance with Sec. 7 of the ESA with the Secretary of the Interior, through the Fish and Wildlife Service and/or the National Marine Fisheries Service, to ensure that any Federal action (including land use plans) or activity is not likely to jeopardize the continued existence of any species listed or proposed to be listed under the provisions of the ESA, or result in the destruction or adverse modification of designated or proposed critical habitat (Sec. 1536 (a), Interagency Cooperation, and 50 CFR 402).

8. The Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271 et seq., requires the Federal land management agencies to identify river systems and then study them for potential designation as wild, scenic, or recreational rivers.

9. The Wilderness Act, as amended, 16 U.S.C. 1131 et seq., authorizes the President to make recommendations to the Congress for Federal lands to be set aside for preservation as wilderness.

10. The Antiquities Act, 16 U.S.C. 431-433, protects cultural resources on Federal lands and authorizes the President to designate National Monuments on Federal lands.

11. The National Historic Preservation Act (NHPA), as amended, 16 U.S.C. 470, expands protection of historic and archaeological properties to include those of national, State, and local significance and directs Federal agencies to consider the effects of proposed actions on properties eligible for or included in the National Register of Historic Places.

The Middle Oregon Treaty signed June 25, 1855, ratified March 8, 1859 (12 STAT 963), reserved rights for the Warm Springs to continue off-reservation subsistence activities on public lands, involving fishing, hunting, gathering, and grazing.

12. The American Indian Religious Freedom Act, 42 U.S.C. 1996, establishes a national policy to protect and preserve the right of American Indians to exercise traditional Indian religious beliefs or practices.

13. Federally Recognized Tribes and Tribal Reserved Rights - Federally recognized tribes are sovereign nations that maintain a unique government to government and trust relationship with the United States (American Indian Resources Institute 1988:26). The trust relationship is essentially one in which Indian tribes trust the federal government to honor the reserved rights made in treaties or other agreements in exchange for Indian lands (Pevar 1992:26).

In the past, this relationship has been acknowledged in one of three ways; by treaty ratification, Congressional Act, or executive order (Zucker et. al. 1983:131). The various treaties, congressional acts, and Executive Orders that have been crafted during the past 150 years have established a unique legal relationship with the three federally recognized tribes and the United States government. Part of that legal relationship may be found in the Tribes' reserved rights and privileges to harvest and utilize traditional resources, to visit and maintain sacred sites and participate in ceremonies that preserve the essential elements of their culture. Those resources and sacred sites, located on ancestral lands and ceded to the federal government, now constitute a large part of the public domain.

14. The Recreation and Public Purposes Act, as amended, 43 U.S.C. 869 et seq., authorizes the Secretary of the Interior to lease or convey BLM lands for recreational and public purposes under specified conditions.
15. The Mineral Leasing Act, as amended, 30 U.S.C. 181 et seq., authorizes the development and conservation of oil and gas resources.
16. The Onshore Oil and Gas Leasing Reform Act, 30 U.S.C. 181 et seq., provides:
  - a. Potential oil and gas resources be adequately addressed in planning documents;
  - b. The social, economic, and environmental consequences of exploration and development of oil and gas resources be determined; and
  - c. Any stipulations to be applied to oil and gas leases be clearly identified.
17. The General Mining Law, as amended, 30 U.S.C. 21 et seq., allows the location, use, and patenting of mining claims on sites on public domain lands of the United States.
18. The Mining and Mineral Policy Act, 30 U.S.C. 21a, establishes a policy of fostering development of economically stable mining and minerals industries, their orderly and economic development, and studying methods for disposal of waste and reclamation.
19. The Taylor Grazing Act, 43 U.S.C. 315, “[T]he Secretary of the Interior is authorized, in his discretion, by order to establish grazing districts or additions thereto... of vacant unappropriated and unreserved lands from any part of the public domain...which in his opinion are chiefly valuable for grazing and raising forage crops[.]...” The Act also provides for the classification of lands for particular uses.
20. The Public Rangelands Improvement Act, 43 U.S.C. 1901, provides that the public rangelands be managed so that they become as productive as feasible in accordance with management objectives and the land use planning process established pursuant to 43 U.S.C. 1712.
21. Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations), 49 Fed. Reg. 7629, requires that each Federal agency consider the impacts of its programs on minority populations and low income populations.
22. Executive Order 13007 (Indian Sacred Sites), 61 Fed. Reg. 26771, requires Federal agencies to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions to:
  - a. Accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners; and
  - b. Avoid adversely affecting the physical integrity of such sacred sites.
23. Executive Order 13084 (consultation and Coordination with Indian Tribal Governments) provides, in part, that each Federal agency shall establish regular and meaningful consultation and collaboration with Indian tribal governments in the development of regulatory practices on Federal matters that significantly or uniquely affect their communities.
24. Executive Order 13112 (Invasive Species) provides that no Federal agency shall authorize, fund or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk or harm will be taken in conjunction with the actions.

25. Secretarial Order 3175 (incorporated into the Departmental Manual at 512 DM 2) requires that if Department of the Interior (DOI) agency actions might impact Indian trust resources, the agency explicitly address those potential impacts in planning and decision documents, and the agency consult with the tribal government whose trust resources are potentially affected by the Federal action.

26. Secretarial Order 3206 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act) requires DOI agencies to consult with Indian Tribes when agency actions to protect a listed species, as a result of compliance with ESA, affect or may affect of Indian lands, tribal trust resources, or the exercise of American Indian tribal rights.

# **Appendix C**

## **Management Guidance**

### **Continued in this Document**

# Appendix C

## Management Guidance Continued in this Document

S o u r c e		BLM policy, law, regulation
Issue Category	Brothers/La Pine RMP plus subsequent decisions Brothers/La Pine RMP	
<b>Vegetation</b> Noxious Weeds	Prineville District Integrated Weed Management EA (1994)	Vegetation Treatment on BLM Lands EIS (1991)
<b>Wildlife</b> Special Status Species	<p>Vegetative habitats could be maintained or improved using a variety of techniques, such as mowing shrubs, prescribed burning, livestock grazing and commercial and non-commercial tree cutting.</p> <p>Vegetation management actions that occur within habitats of federally listed or proposed species would maintain or improve the conditions that support those species and/or be consistent with landform, climate, and biological and physical characteristics of the ecosystem (B/LP RMP, p.121)</p> <p>In situations where data are in sufficient to make an assessment of proposed actions, surveys of potential habitats would be made before a decision is made to take any action that could affect special status species (B/LP RMP p. 122).</p> <p>Prior to any action that may negatively affect important habitats of special status species develop a conservation strategy for that species. Until such a strategy could be developed, inventory key features and close (seasonally or permanently) areas (caves, cliffs, adjacent roads) where necessary to manage for bats or other special status species (B/LP RMP modified, p. 97).</p> <p>Management activities in the habitat of listed, candidate threatened, or endangered and sensitive species would maintain or improve habitat conditions and/or not prevent or retard attainment of future desirable habitat conditions (B/LP RMP modified, p. 121).</p> <p>Conduct periodic surveys of potential raptor habitats and monitor active and historic sites to determine occupancy and management consistency (B/LP RMP, modified, p. 97).</p> <p>Vegetative habitats would be maintained or improved using a variety of techniques, such as mowing shrubs, prescribed burning, livestock grazing and/or commercial timber harvest and non-commercial tree cutting.</p>	<p>Conservation and protection of habitats for designated special status species, and other state or federally protected species, is directed by Bureau policy in BLM Manual 6840</p> <p>Maintain existing sagebrush-steppe habitats in the existing sage grouse range in order to sustain sage grouse populations and protect options for the future (Information Bulletin (IB) No. OR-200-334).</p> <p>As directed in BLM Manual 6840 - Special Status Species Management, the BLM would take actions that progress towards the conditions indicating attainment of the Fundamentals of Rangeland Health (described in 43 CFR 4180.1) and associated Standards (43 CFR 4180.2).</p> <p><u>The Bald Eagle protection Act: Protection of Bald and Golden Eagles</u> provides for the protection of bald and golden eagles.</p>
<b>Non-Special Status Species</b>	<p>All new fences for the control of livestock would be built to standard Bureau wildlife specifications to allow wildlife passage and existing fences would be modified as appropriate</p>	

Issue Category	S o u r c e Brothers/La Pine RMP plus subsequent decisions Brothers/La Pine RMP	B L M policy, law, regulation
Special habitat	<p>(BLP RMP, p. 97), with the exception of fences built specifically to keep ungulates out of an area.</p> <p>Fish and wildlife habitat management impacts would continue to be evaluated on a case-by-case basis as part of project-level planning (i.e., grazing, recreation and timber management plans, right-of-way applications, etc.) (BLP RMP, p. 97).</p> <p>Evaluations would consider the significance of the proposed projects and the sensitivity of fish and wildlife habitats in the affected areas. Stipulations would be attached as appropriate to assure compatibility of projects with management objectives for fish and wildlife habitat (BLP RMP, p. 97).</p> <p>Permitted activities would be restricted in all areas where vegetation manipulation (human or naturally caused) occurs and results in sensitive soil and plant conditions, or the site already has sensitive soils and/or plant conditions. These permitted activities include, but are not limited to, livestock grazing, off-road vehicle travel, recreational events, construction of new roads and trails, and timber harvests.</p> <p>Range developments would be designed to achieve both wildlife and livestock grazing management objectives.</p> <p>Where natural springs exist and are developed, the development would provide a more dependable water source for wildlife as well as livestock. Water troughs would accommodate use by wildlife and livestock, and would be constructed with wildlife escape devices. The spring area and the overflow would be fenced to exclude livestock trampling (B/LP RMP, 87-88).</p> <p>Where pipelines are developed to deliver water more than two miles from an existing water source, the water system would be designed to provide water for wildlife between July and October (B/LP RMP, p. 97).</p> <p>Manage important wildlife habitats to minimize human disturbance by maintaining seasonal closures throughout the sensitive period (B/LP RMP, p. 97).</p> <p>In seasonally important wildlife habitats (winter range, nest sites, roosts, etc.), major construction and maintenance work would be scheduled to avoid or minimize disturbance to wildlife (B/LP RMP, p. 97).</p> <p>Timber sales would be designed to provide sufficient cover to maintain the existing deer and elk migration corridor through the La Pine area (B/LP RMP, p. 97).</p>	The Federal Cave Resources Protection Act of 1988

Issue Category	S o u r c e Brothers/La Pine RMP plus subsequent decisions	B L M policy, law, regulation
components		<p>provides for the protection of cave resources including the free movement of any animal or plant life into or out of any significant cave located on Federal lands.</p> <p>The Interim Cave Management Policy (Instruction Memorandum No. OR-95-021) provides guidelines for the protection of cave resources</p> <p>As directed under the Federal Land Policy and Management Act (FLPMA) of 1976 public lands would be managed in a manner that protects ecological values, maintains their natural condition and provides food and habitat for wildlife.</p> <p>The Bureau is directed under Executive Order No. 13186 directs the bureau to protect, restore, enhance and manage habitat of migratory birds and prevent the loss or degradation of remaining habitats on BLM and to evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern.”</p> <p>Requirements for documenting individuals, populations, and distributions of both special and non-special status species as well as their habitat are found in the following direction:</p> <p>FLPMA [Section 201 (43 U.S.C. 1711) a] directs BLM to prepare and maintain on a continuing basis an inventory of all public lands and their resource values (BLM manual 6600 Authority).</p> <p>The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-17: 83 Stat.852: p.1, 91-190) directs federal agencies to use ecological information in the planning and development of resources-oriented projects.</p> <p>BLM Manual 6840 – Special Status Species Management, directs the Field Office Manager to conduct and maintain current inventories for special</p>
Special and Non-special Status Species		

Issue Category	S o u r c e	
	Brothers/La Pine RMP plus subsequent decisions	BLM policy, law, regulation
		status species on public lands.  BLM Fish and Wildlife 2000 directs field offices to identify and monitor key wildlife habitats.  The Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington meet the requirements and intent of 43 Code of Federal Regulations, Subpart 4180 (Rangeland Health).  These standards provide for modifying grazing where the standard for riparian-wetland function is not being achieved, or where measurable progress is not made toward achieving the standard.  The BLM will comply with the Federal Clean Water Act (CWA) and the State DEQ's program by employing the joint USFS and BLM protocol for addressing CWA section 303(d) listed waters. One goal of the strategy is to address all waters on BLM-administered lands generally within the timeline established by the State of Oregon DEQ.  The BLM will take actions relative to 303(d) listed waterbodies in accordance with the protocol as outlined in Appendix E (Protocol for 303(d) listed Streams).  FLPMA requires that corrective actions take place, where practicable, to resolve erosive conditions and that surface disturbance at all project sites be minimized.  FLPMA also provides guidance for soil rehabilitation after disturbances
<b>Hydrology</b> Riparian conditions, Watershed/ Hydrologic Function, and Water Quality		
Soils		
<b>Special Management Areas</b> Areas of Critical Environmental Concern	Area designated Pecks milkvetch ACEC under Brothers La Pine RMP would remain an ACEC or become part of a larger ACEC.  Livestock grazing is allowed providing restrictions or stipulations are designed to maintain or	FLPMA provides Criteria for Selecting ACECs

<sup>1</sup> The BLM managed land containing these caves was claimed by the State of Oregon under State in-lieu selection process (1997) and is no longer under Federal management.

Issue Category	S o u r c e	BLM policy, law, regulation
<p>(ACECs)</p> <p><b>Wilderness Study Areas</b></p> <p><b>Caves</b></p>	<p><b>Brothers/La Pine RMP plus subsequent decisions Brothers/La Pine RMP</b></p> <p>enhance special values.</p> <p>A portion of the Wagon road ACEC will remain an ACEC (see Common to 2-6 for changes in configuration)</p> <p>Horse Ridge and Powell Butte RNA/ACECs would retain status.</p> <p>Badlands would remain an ACEC and WSA (unless congress designates Badlands as Wilderness).</p> <p>The following nominated caves within the planning area have been determined to be Significant under the FCRPA (with the year of determination):</p> <p>Horse Butte Indian Cave (1995), Pictograph (Stout) Cave (1995), Redmond Cave (1995), Garbage Cave #1* (1997)<sup>1</sup>, Garbage Cave #2*(1997), Three Vulture Cave*(1997), Williams Cave*(1997), Stevens Road Cave*(1997), Unnamed Car Cave*(1997).</p>	<p>Continuation of management in Badlands and Steelhead Falls Wilderness Study Areas under interim rules, BLM policy (H-8550-1) until Congress either designates these lands as wilderness or releases them for other purposes.</p> <p>Make determinations of Significance for those caves nominated for significance within the planning area, according to FCRPA criteria (43 CFR Part 37.11(c)).</p>
<p><b>Land Use</b></p> <p><b>Commercial Forestland</b></p>	<p>Manage approximately 41,111 acres of commercial forestland in the La Pine block and approximately 977 acres of commercial forestland in the northern area in a sustainable manner to ensure the availability of forest products in perpetuity for social/economic needs.</p> <p>Allow harvest of up to 2,000 cords of firewood and other wood products from the approximately 170,000 acres of juniper woodlands within the planning area.</p> <p>Harvest can be accomplished by a variety of manual and mechanized techniques including chainsaw, pick-up trucks, feller-bunchers, skidders, portable chippers, and other wheeled or tracked equipment.</p> <p>Forest product outputs for the next 30-40 years in the La Pine area would be limited to relatively minor quantities in accordance with current direction in the Brothers/La Pine RMP.</p> <p>Cutting areas would be designed to blend with the natural landscape and topography.</p> <p>Manage the BLM-owned vegetative resource, including timber harvest and fuels reduction, in La Pine State Park considering direction provided in the Oregon Parks and Recreation</p>	

Issue Category	S o u r c e	BLM policy, law, regulation
<p><b>Brothers/La Pine RMP plus subsequent decisions Brothers/La Pine RMP</b></p> <p>Department - La Pine State Park Master Plan.</p> <p>Because the vegetative resource is federally owned, vegetative treatments proposed on BLM patent lands within the State Park would also be managed in accordance with the guidelines in the Upper Deschutes RMP and the appropriate level of analysis required by the National Environmental Policy Act.</p> <p>All areas currently closed to livestock grazing would stay closed.</p> <p>Restrict or prohibit livestock grazing and rangeland projects in ACECs, WSAs, and Wild and Scenic Rivers, if the use is not compatible with the values for which the areas are designated.</p> <p>Prevent BLM-permitted livestock from straying onto private land in closed range, where requested by private landowner.</p> <p><b>Livestock Grazing</b></p> <p><b>Mining</b></p>	<p>396,185 acres are available for locatable mineral entry under the 1872 mining laws.</p> <p>366,640 acres are available for mineral leasing.</p> <p>301,078 acres available for saleable materials</p> <p>Surface occupancy for fluid mineral leasing is not allowed on 16,480 acres surrounding Prineville Reservoir.</p> <p>Reserved Federal mineral estate (Federally owned minerals in non-Federally owned lands) may be explored and developed for mineral resources.</p>	<p>FLPMA, Public Rangeland Improvement Act (PRIA), Taylor Grazing Act, and other acts, direct the management of public land for multiple use and sustained yield. Desired outcomes may take social and economic values into consideration (p. III-5, BLM H-1601-1 Land Use Planning Handbook).</p> <p>FLPMA directs the BLM to improve forage conditions, with resulting benefits to wildlife, watershed protection, and livestock production.</p> <p>The Standards for Rangeland Health (1997 BLM) direct the BLM to modify or discontinue livestock grazing prior to the start of the next grazing year if livestock are found to be a significant contributing factor to failure to attain a Standard. The Standards address watershed function (upland and riparian), ecological processes, water quality, and habitat for native, T&amp;E and locally important species.</p> <ul style="list-style-type: none"> <li>• The Mining Law of 1872 as amended provides guidance for exploring for, discovering, and purchasing locatable mineral deposits on federal lands open to those activities.</li> <li>• The Mineral Leasing Act of 1920 as amended authorizes the BLM to grant leases for development of deposits of coal, phosphate, potash, sodium, sulfur and other leasable minerals on federal public domain lands open for this purpose and on lands having federal reserved minerals.</li> <li>• The Materials Act of 1947 as amended authorizes the BLM to administer mineral materials.</li> </ul>

Issue Category	S o u r c e Brothers/La Pine RMP plus subsequent decisions Brothers/La Pine RMP	BLM policy, law, regulation
<p>Rockhounding</p> <p>Develop a rockhounding management plan for North Ochoco Reservoir.</p> <p>Monitor rockhounding sites through visitor use surveys, photographs, and periodic soil and vegetative condition inventories to determine disturbance attributable to recreation. Use baseline data to determine limits of acceptable change.</p> <p>Military will be permitted to Train on BLM lands</p>		<ul style="list-style-type: none"> <li>• The Geothermal Steam Act of 1970 as amended authorizes the BLM to grant leases for geothermal exploration and development on federal public lands open for this purpose.</li> <li>• FLPMA (1976) directs the management of public land to prevent unnecessary or undue degradation of the land.</li> <li>• 43 CFR Parts 3100, 3200, 3600, and 3800 regulate onshore oil and gas leasing, geothermal leasing, mineral materials disposal, and mining claims under the general mining laws respectively.</li> </ul> <p>43 CFR Subpart 3622 provides for the non-commercial collection of petrified wood from public lands for personal use.</p> <p>43 CFR Subpart 8365.1-5 provides for the non-commercial collection of rocks, mineral specimens, and common invertebrate fossils, and semi-precious gemstones from public lands for non-commercial use.</p> <p>Military use would be under permit or lease as authorized by FLPMA and reaffirmed in the CFR and BLM Manual and handbook.</p> <p>OMD would compliance with the standard terms and conditions as specified or authorized in 43 CFR Part 2920.7 Terms and Conditions.</p>
<p><b>Recreation</b></p>	<p>The following areas are designated as Closed to motorized vehicles:</p> <ul style="list-style-type: none"> <li>• Airport Allotment</li> <li>• Horse Ridge and Powell Butte RNAs</li> <li>• Smith Rock block</li> <li>• Southern portion of the Wagon Road ACEC</li> </ul> <p>The following river sections are designated Closed to motorized vehicles:</p> <ul style="list-style-type: none"> <li>• Little Deschutes Parcel</li> <li>• Middle Deschutes consistent with Wild and Scenic River Plan</li> <li>• Lower Crooked River consistent with Wild and Scenic River Plan</li> </ul>	

Issue Category	S o u r c e	
	Brothers/La Pine RMP plus subsequent decisions Brothers/La Pine RMP	BLM policy, law, regulation
Transportation and Utilities	<p>An area management plan would be prepared for the Cline Buttes area</p> <p>All transportation/utility corridors identified by the Western Regional Corridor Study would be designated as transportation/utility corridors. Potential wind energy development sites and existing communications sites in the planning area have been identified.</p> <p>Areas of critical environmental concern, wilderness study areas, and Wild and Scenic Rivers would be designated as right-of-way exclusion areas.</p> <p>All areas identified as having special status plant or animal species would be designated as avoidance areas.</p>	<p>Federal regulations contained in 43 CFR 2806.1, provide guidance for the designation of right-of-way corridors.</p>
	<p>About 191,038 acres identified as Z-1 in B/LP RMP would continue to be Z-1 under all alternatives. These lands include Wild and Scenic River areas</p> <p>About 1,700 acres identified as Z-2 in B/LP RMP that would continue to be Z-2 under all alternatives.</p> <p>About 1,706 acres of public lands identified as Z-3 in B/LP RMP would continue as Z-3, including isolated parcels between Bend and Redmond, around Prineville, and northwest of La Pine.</p> <p>About 1,605 acres of land identified for community expansion in Brothers/La Pine are identified as suitable for community expansion in all alternatives.</p> <p>There are 28,580 acres of land identified as suitable for acquisition in B/LP RMP that have also been identified as suitable for acquisition under Alternatives 2-7. <b>Note:</b> All parcels and areas selected for acquisition would remain the same throughout the alternatives, although the emphasis on the order or timing of the acquisition may vary according to each alternative.</p> <p>Private parcels to acquire should (1) facilitate access to public land and resources, (2) or maintain or enhance important public values and uses, or (3) maintain or enhance local social and economic values in public ownership by:</p> <ul style="list-style-type: none"> <li>• Reducing the number of developed inholdings that may cause resource or social conflicts</li> <li>• Improving wildlife values</li> <li>• Improving or increasing habitat of special status species</li> <li>• Improving or increasing riparian or wetland habitats</li> <li>• Improving wildlife travel corridors</li> <li>• Improving recreation opportunities</li> <li>• Providing new or improved trail links</li> <li>• Providing access to public lands that currently have no legal access</li> </ul>	<p>Any process for obtaining private parcels (sale or exchange, donation, or easement) would involve willing participants.</p> <p>Retain in federal ownership all habitat essential for the survival and recovery of any federally listed or proposed species or BLM sensitive species, including historic habitat that has retained it's potential to sustain listed species and is deemed to be essential for species survival (BLM Manual 6840- Special Status Species Management). However, trading of land to acquire habitats of equal or better in value would be considered.</p>
Land Ownership		

Issue Category	S o u r c e	
	Brothers/La Pine RMP plus subsequent decisions Brothers/La Pine RMP	BLM policy, law, regulation
	<ul style="list-style-type: none"> <li>• Providing new or expanding existing recreation opportunities that are limited or in high demand</li> <li>• Providing for better management of special management areas/sites such as ACECs, WSAs, etc.</li> </ul>	
<b>Public Health and Safety</b>	<p>Pursuant to 43 CFR 9212.2 (a) "To prevent wildfire or facilitate its suppression, an authorized officer may issue fire prevention orders that close entry to, or restrict uses of, designated public land," the following sections of river are closed to campfires seasonally, from June 1 to October 15th:</p> <ol style="list-style-type: none"> <li>1. Within ½ mile of the River's edge along the Lower Crooked River from the Highway 97 bridge to Lake Billy Chinook,</li> <li>2. Within ½ mile of the River's edge along the Middle Deschutes River from Highway 20 bridge to Lake Billy Chinook.</li> </ol> <p>If determined necessary, the fire closures could be extended based on existing conditions.</p>	
<b>Archaeology</b>	<p>As described under special management areas a portion of the Wagon Road ACEC will remain an ACEC.</p> <p>At a minimum, survey 50 acres annually in areas considered to be of high probability the location and discoverability of significant archaeological sites.</p>	<p>Executive Order 11593 directs Federal agencies to inventory public lands and to nominate eligible properties to the NRHP.</p> <p>BLM 8100 provides management policy and use allocations for the disposition and utilization of agency-managed heritage resources.</p> <p>Follow the guidance provided in the National Cultural Programmatic Agreement (1997) and the Protocol for Managing Cultural Resources on Lands Administered by the BLM in Oregon (1998).</p>

# Appendix D

## Disposal, Withdrawal, and Acquisition Lands

### Common to All Alternatives

All acreage was determined from the Master Title Plats or estimates from the Central Oregon Public Lands map, 1998, and may differ from the acreage determined with GIS. Totals are to the nearest 10 acres.

### Public Lands Currently Withdrawn

A withdrawal is a formal action that accomplishes one or more of the following actions:

- Transfers total or partial jurisdiction of Federal land between Federal agencies.
- Segregates (closes) Federal land to some or all of the public land laws and/or mineral laws. Segregation may be withdrawn from operation of the general land laws and closed to non-metalliferous mining (cement quality limestone, diatomite etc.), but open to metal mining (gold, silver, mercury etc.); or withdrawn from operation of the general land laws and the mining laws; or withdrawn from the general land laws..
- Dedicates land for a specific public purpose.

Three major categories of formal withdrawals exist: (1) Congressional Withdrawals, (2) Administrative Withdrawals, and (3) Federal Power Act or Federal Energy Commission Withdrawals (FERC).

1. Congressional Withdrawals are legislative withdrawals made by Congress in the form of public laws (Acts of Congress).
2. Administrative Withdrawals are made by the President (E.O. - Executive Order), Secretary of the Interior (S.O. - Secretarial Order or P.L.O - Public Land Order), or other authorized officers of the executive branch of the Federal government.
3. Federal Power Act or FERC withdrawals are power project withdrawals established under the authority of the Federal Power Act of 1920. Such withdrawals are automatically created upon filing of an application for a hydroelectric power development project with FERC.

The Upper Deschutes Planning Area has existing withdrawals for public water reserves and 1 for military uses pending withdrawal application, see Table D-1.

### Recreation and Public Purposes Act

Recognizing the strong public need for a nationwide system of parks and other recreational and public purposes areas, the Congress enacted the Recreation and Public Purposes Act (R&PP). The act authorizes the sale or lease of public lands for recreational or public purposes to State and local governments and to qualified nonprofit organizations. Examples of typical uses under the act are historic monument sites, campgrounds, schools, fire houses, law enforcement facilities, municipal facilities, landfills, hospitals, parks, and fairgrounds. The act applies to all Public Lands, except

**Table D-1. Current public lands withdrawals**

Agency	LocationT. R. S.	Acres	Purpose	Serial Number
Bureau of Land Management	T.19 S., R.14 E., Sec. 15 & 22	600	Western Juniper Natural Area	OR-012701 03/04/1963, PLO 2956
Bureau of Reclamation	T.17 S., R. 16 E., Sec. 1	1,120	Irrigation Ochoco Project	OR-19325 04/14/43, Secretarial Order
Bureau of Reclamation	T.17 S., R.16 E., Sec. 12	40	Irrigation Crooked River Project	OR-19327 09/16/1953, BLM Order
Bureau of Reclamation	T.17 S., R.16 E., Sec. 10, 11, & 24	320	Irrigation Crooked River Project	OR-5771 04/10/58, BLM Order
Bureau of Reclamation	T. 17 S., R.17 E., Sec. 3 & 4	840	Irrigation Ochoco Project	OR-19325 04/14/43, Secretarial Order
Bureau of Reclamation	T. 17 S., R.17 E., Sec. 4	80	IrrigationPrineville Reservoir	OR-19326 05/23/1946, Secretarial Order
Bureau of Reclamation	T. 17 S., R.17 E., Sec. 9, 10, & 19	320	Irrigation Crooked River Project	OR-19327 09/16/1953, BLM Order
Bureau of Reclamation	T.17 S., R.17 E., Sec. 9	40	Irrigation Crooked River Project	OR-5771 04/10/58, BLM Order
Bureau of Reclamation	T.17 S., R.17 E., Sec. 9	40	Irrigation Crooked River Project	OR-010313 12/03/1962, PLO 2829
Bureau of Reclamation	T.16 S., R.17 E., Sec. 31, 32, & 33	360	Irrigation Ochoco Project	OR-19325 04/14/43, Secretarial Order
Bureau of Reclamation	T.16 S., R.17 E., Sec. 24, 23, 26, 27, 28, 31, & 32	520	Irrigation Crooked River Project	OR-19327 09/16/1953, Secretarial Order
Bureau of Reclamation	T.16S., R.17E., Sec. 24, 31, & 34	200	Irrigation Crooked River Project	OR-5771 04/10/58, BLM Order
Bureau of Reclamation	T.16S., R.17E., Sec. 34	80	Irrigation Crooked RiverProject	OR-010313 12/03/1962, PLO 2829
Bonneville Power Administration	T.15S., R.13E., Sec. 18	40	Electric Substation Site	OR-01989 04/28/1952, PLO 821
Federal Aviation Administration	T.15 S., R.13 E., Sec. 21	120	Communication Site	OR-09947 06/30/1960, PLO2141
Bureau of Land Management	T.13 S, R.12 E., Sec. 3, 4, 9, 10, 11, 13, & 14	440	Power Site Reserve 425	OR-19071 03/09/1914, Executive Order
Bureau of Land Management	T.13 S., R.12 E., Sec. 28 & 33	100	Power Site Reserve 480	OR-19077 02-17-1915, Secretarial Order
Bureau of Land Management	T.13 S., R.12 E, Sec. 27	40	Power Site Reserve 25	OR-19132 03/10/1922, Secretarial Order
Bureau of Land Management	T.13 S., R.12 E., Sec. 5-8, 17, 20, 21, 27, 28, 33, & 34	1685	Power Site Reserve 26	OR-19025 07/02/1910, Executive Order
Bureau of Land Management	T.12 S., R.12 E., Sec. 32	280	Power Site Reserve 26	OR-19025 07/02/1910, Executive Order
Bureau of Land Management	T.12 S., R.12 E., Sec. 33	120	Power Site Reserve 63	OR-19029 07/02/1910, Executive Order

Agency	LocationT. R. S.	Acres	Purpose	Serial Number
Bureau of Land Management	T.15 S., R.12 E., Sec. 1 & 12	320	Power Site Reserve 26	OR-19025 07-02-1910 Executive Order
Bureau of Land Management	T.14 S., R.12 E., Sec. 9, 10, 11, 14, 26, & 35	560	Power Site Reserve 26	OR-19025 07-02-1910, Executive Order
Bureau of Land Management	T.19 S., R.17 E., Sec. 12	120	Power Site Reserve 64	OR-19030 07-02-1910, Executive Order
Army Corps of Engineers	T.18 S., R.13 E., Sec. 11	160	Military Training	OR 39055 12/10/1986, PLO-6634
Army Corps of Engineers	T.15 S., R.14 E., Sec. 31	76	Military Training	OR 39055 12/10/1986, PLO-6634
Oregon State Parks	T.14 S., R.17 E., Sec. 32	40	Public Recreation Area: Fishing	OR 03888 04/12/1956, PLO-1286
<b>Total Acres</b>		<b>8,346</b>		

lands with national forests, national parks and monuments, national wildlife refuges, Indian lands, and acquired lands. BLM may sale or lease only the amount of land required for efficient operation of the projects described in an applicant's development plan.

In the Upper Deschutes planning area R&PP has been used for sewage treatment facilities in Bend, Redmond, and La Pine; golf courses; libraries; parks, and shooting ranges. Current and pending R&PP leases and transfers are listed in Table D-2. In the future, it is anticipated that R&PP will be used for sewage treatment facility expansions, municipal parks, and expansion of state parks.

## Lands Identified for Disposal

This includes Z-3 or Community Expansion not revised from Brothers La Pine RMP. The acreage figures are shown below in Table D-3.

**Table D-2. R&PP Leases and Pending Transfers**

Agency or Organization	LocationT. R. S.	Acreage	Purpose	Serial Number
City of Redmond	T.14 S., R.12 E., Sec. 24	160	R&PP: Water Facility	OR-054445
COSSA	T.19 S., R.15 E., Sec. 28, 29, & 33	500	R&PP: Shooting Range	OR-48823
Oregon State Parks	T.14S., R.17E., Sec. 32	40	R&PP Public Recreation Area: Fishing	OR 6091 OR 03888, PLO 1286
Local Park	T.14 S., R.16 E., Sec. 28	160	R&PP: Local Park	OR 11369
<b>Total Acres</b>		<b>860</b>		

**Table D-3. Public Lands Available for Disposal in all Alternatives**

<b>Crook County</b>		
<b>Parcels</b>	<b>Legal Description</b>	<b>Acreage</b>
O'Neil	T.14S., R.14E. W.M., Oregon Section 9: E1/2SE1/4; 10: SE1/4NE1/4; 24: N1/2N1/2, SW1/4NW1/4.	80 40 200
Northwest of Prineville	T.14S., R.15E. W.M., Oregon Section 18: N1/2SE1/4, S1/2NE1/4; 30: N1/2NE1/4, S1/2SE1/4.	160 160
North Ochoco Reservoir	T.14S., R.17E., W.M., Oregon Section 26: NW1/4SE1/4; 34: NW1/4NW1/4.	40 40
Southeast of Prineville	T.15S., R.16E., W.M., Oregon Section 2: SE1/4SW1/4, SE1/2; 10: NE1/4NE1/4.	200 40
South Ochoco Reservoir	T.15S., R.17E., W.M., Oregon Section 2: Lot 2; 12: SE1/4SW1/4, SW1/4SE1/4; 14: N1/2SW1/4, SW1/4SW1/4; 24: NE1/4NE1/4.	41.89 80 120 40
East of Ochoco Reservoir	T.15S., R.18E., W.M., Oregon Section 6: S1/2SE1/4; 8: N1/2NE1/4, W1/2NW1/4; 18: NE1/4SW1/4.	80 160 40
	Crook County Total	1,520
<b>Deschutes County</b>		
<b>Parcels</b>	<b>Legal Description</b>	<b>Acreage</b>
Redmond	T.15S., R.13E., W.M., Oregon Section 18: SE1/4NE1/4; * 32: NW1/4NE1/4 (that portion lying west of the railroad track), SE1/4NW1/4 (that portion lying west of the railroad track and south of the golf course), NE1/4SW1/4, S1/2SW1/4, SE1/4.	40 306
Deschutes Junction	T.16S., R.12E., W.M., Oregon Section 11: SW1/4SE1/4; * 12: SE1/4SE1/4; 34: NW1/4SE1/4.	40 40 40
South of Redmond Airport	T.16S., R.13E., W.M., Oregon * Section 6: Lot 1, Lot 2 (that portion within one quarter-mile east of the railroad track), SE1/4SW1/4, SE1/4 (that portion within one quarter-mile of the railroad track) * 7: Lot 2, Lot 3, Lot 4 (that portion within one-quarter mile of the railroad track), W1/2NE1/4 (that portion within one-quarter mile east of the railroad track); E1/2NW1/4 (that portion within one-quarter mile of the railroad track); E1/2SW1/4 (that portion within one-quarter mile east of the railroad track).	155.17 225.5
	Deschutes County Total	850
	<b>Total Deschutes and Crook Counties</b>	<b>2,370</b>

# Alternative 1

## Lands Identified for Disposal

Land exchanges and sales were evaluated for plan conformance and viability on a case-by-case basis. The primary means of disposal was through exchange with emphasis on acquiring state and private land. If the parcels were found suitable for disposal, a land classification was issued that states this information. Refer to the criteria governing land tenure adjustments found in Appendix A.

Brothers/La Pine RMP identified approximately 21,802.67 acres of public land for disposal that are also within the current planning boundary. Refer to Table D-4 for the legal descriptions of those public lands remaining available for disposal under Brothers/La Pine.

**Table D-4. Public lands available for disposal In Alternative 1, formerly available in Brothers/La Pine RMP**

Crook County		
Parcels	Legal Description	Acreage
Grizzly Mountain	T.13S., R.15E. W.M., Oregon Section 3: NW1/4SW1/4; 15: NW1/4NW1/4, N1/2SW1/4; 24: E1/2E1/2, SE1/4SW1/4, SW1/4SE1/4; 25: W1/2NE1/4, NE1/4NW1/4, W1/2SW1/4; 26: SE1/4NE1/4, E1/2SW1/4, SE1/4; 27: NW1/4NE1/4; 28: SE1/4SW1/4, SE1/4; 32: NW1/4NE1/4.	40 120 240 200 280 40 200 40
Allen Creek	T.13S., R.16E. W.M., Oregon Section 19: Lot 3, NE1/4SW1/4; 20: S1/2S1/2, NW1/4SW1/4; 21: N1/2NE1/4, SE1/4NE1/4, NE1/4SE1/4; 29: NW1/4NE1/4, NE1/4NW1/4, SW1/4; 30: SE1/4; 32: W1/2.	81.34 200 160 240 160 320
O'Neil	T.14S., R.14E. W.M., Oregon Section 5: SW1/4NW1/4, NW1/4 SW1/4;	80
Northeast of Prineville	T.14S., R.16E. W.M., Oregon Section 1: Lots 1-3, S1/2NE1/4, SE1/4; 12: E1/2, SW1/4NW1/4, SW1/4; 14: N1/2N1/2, SW1/4NW1/4, W1/2SW1/4, SE1/4SE1/4; 22: NE1/4NE1/4; * 28: NE1/4SW1/4, NW1/4SE1/4, S1/2SE1/4.	322.46 520 320 40 160
Southwest of Prineville	T.15S., R.15E., W.M., Oregon Section 31: Lot 4, SE1/4SW1/4.	79.9
Southeast of Prineville	T.15S., R.16E., W.M., Oregon Section 22: E1/2; 30: SW1/4NE1/4; SE1/4SW1/4, W1/2SE1/4, SE1/4SE1/4; 32: NW1/4NE1/4, NW1/4, N1/2SW1/4, SW1/4SW1/4.	320 200 320

South Ochoco Reservoir	T.15S., R.17E., W.M., Oregon Section 28: All; 32: All; 34: W1/2NW1/4, S1/2.	640 640 400
Davis Road Subdivisions	T.16S., R.16E., W.M., Oregon Section 2: Lot 1; 4: Lots 1-3, SE1/4NE1/4; 6: Lot 5, NW1/4SE1/4, SE1/4SE1/4; 12: SE1/4NE1/4; 13: S1/2SE1/2; 21: NE1/4, E1/2NW1/4, NE1/4SW1/4, NE1/4SE1/4; 22: SW1/4SW1/4; 23: SW1/4NE1/4, NE1/4NW1/4, E1/2SW1/4; 24: S1/2SE1/4; 26: NE1/4, E1/2NW1/4, NE1/4SW1/4, N1/2SE1/4, SE1/4SE1/4; 27: SE1/4SW1/4, E1/2NE1/4. 28: E1/2NW1/4, E1/2SW1/4, NW1/4SE1/4, S1/2SE1/4	37.28 161.86 119.04 40 80 320 40 160 80 400 120 280
North Prineville Reservoir	T.16S., R.17E., W.M., Oregon Section 4: Lot 4; 6: Lot 1, Lot 2, Lot 5, Lot 8, S1/2NE1/4, SE1/4; 7: Lot 2, Lots 4-11, E1/2SW1/4, N1/2SE1/4; 8: N1/2, N1/2S1/2; 9: All; 15: N1/2, NW1/4SW1/4, SE1/4SE1/4; 16: NE1/4, S1/2NW1/4; 17: W1/2SW1/4; 18: Lot 1, Lot 2, E1/2NW1/4, SE1/4SW1/4, NE1/4SE1/4, S1/2SE1/4.	38.94 396.29 501.18 480 640 400 240 80 330.8
	Crook County Total	11,310
<b>Deschutes County</b>		
<b>Parcels</b>	<b>Legal Description</b>	<b>Acreage</b>
Steamboat Rock	T.14S., R.12E., W.M., Oregon Section 22: NE1/4NE1/4, SW1/4NE1/4, W1/2 W1/2, SE1/4SW1/4, W1/2SE1/4; 27: N1/2NW1/4, SW1/4NW1/4; 34: N1/2SW1/4, SW1/4SW1/4, E1/2 SE1/4; 35: SE1/4SW1/4, SE1/2.	360 120 200 200
Terrebonne	T.14S., R.13E., W.M., Oregon Section 29: Lot 1, Lot 4, SW1/4NE1/4, NE1/4NW1/4, E1/2SE1/4; 30: Lot 6, SW1/4NE1/4NW1/4, W1/2SE1/4NW1/4, W1/2NE1/4SW1/4, SE1/4SW1/4; 31: E1/2 W1/2.	205 110.69 160
Cline Buttes	T.15S., R.12E., W.M., Oregon Section 1: SE1/4NW1/4; 2: SW1/4NE1/4, N1/2SW1/4, SW1/4SW1/4; 3: SE1/4NW1/4, N1/2SE1/4; 10: SW1/4SW1/4; 11: NW1/4NW1/4.	40 160 120 40 40
Redmond	T.15S., R.13E., W.M., Oregon * Section 21: E1/2SE1/4SW1/4, W1/2SW1/4SE1/4; * 23: E1/2SE1/4; * 26: NE1/4NE1/4, SW1/4NW1/4NE1/4, S1/2NE1/4, S1/2; * 33: All; * 34: All; * 35: All.	40 80 450 640 640 640

Deschutes Junction	T.16S., R.12E., W.M., Oregon Section 13: SW1/4NE1/4, SE1/4SW1/4, SE1/4.	240
South of Redmond Airport	T.16S., R.13E., W.M., Oregon Section 4: All; 5: All; 6: SE1/4 (that portion east of one quarter-mile east of the railroad track); 7: Lot 4 (that portion east of one quarter-mile east of the railroad track), NE1/4 (that portion east of one quarter-mile east of the railroad track), E1/2NW1/4 (that portion east of one quarter-mile east of the railroad track), E1/2SW1/4 (that portion east of one quarter-mile east of the railroad track), SE1/4; 8: All.	364.97 366.35  65.31   358.4 640
La Pine	T.21S., R.10E., W.M., Oregon Section 33: W1/2SE1/4; 34: E1/2SE1/4, SW1/4SE1/4.	80 120
La Pine	T.21S., R.11E., W.M., Oregon Section 29: SW1/4SW1/4.	40
La Pine	T.22S., R.10E., W.M., Oregon Section 3: Lot 1, Lot 2; 5: N1/2SE1/4; 12: the portion of the W1/2SW1/2 lying east of the Burlington Northern rail road.	80.83 80 40
Deschutes County Total		6,720
<b>Total All</b>		18,030

## Common to Alternatives 2-7

### Lands Identified for Disposal

There are no parcels identified for disposal Common to Alternatives 2-7 that were not already identified for disposal Common to All Alternatives.

### Lands Identified for Acquisition

The private lands listed in Table D-6 have been proposed for acquisition in Alternatives 2-7. Lands would only be acquired from willing landowners. After the table, general areas and lineal features where acquisitions would be considered are described.

In addition to the specific sites above, acquisitions would be desirable in certain general areas and along lineal features. These general areas and lineal features follow:

#### **Crook County:**

- Southeast of Smith Rocks State Park for wildlife and recreation connectivity; parcels not identified though based on canal and river proposed trail system.
- Powell Buttes for access with several options under consideration.
- Five miles southeast of Prineville Reservoir, to block up and provide a corridor for wildlife and recreation between Alfalfa Flat and the Maury Mountains.

<b>Table D-5. Private Lands Considered for Acquisition</b>		
<b>Crook County</b>		
<b>Parcels</b>	<b>Legal Description</b>	<b>Acreage</b>
East of the McKay Creek intersection with Allen Creek, for wildlife	T. 13 S., R. 15 E., Sec. 25, ENE, WNW, SENW, ESW, SE; Sec. 26, NENE.	440
		40
	T. 13 S., R. 16 E., Sec. 19, N, SSW, SE;	560
	Sec. 29, ENE, SWNE, WNW, SENW, SE;	400
	Sec. 30, N, SW.	480
Smith Rocks	T. 14 S., R. 14 E., Sec 6, NNE.	40
West of Old Dry Creek, for wildlife	T. 14 S., R. 16 E., Sec. 1, WNW, SENW, SW;	280
	Sec. 11, all;	640
	Sec. 12, NNW, SENW;	120
	Sec. 14, SNE, SENW, ESW, NSE, SWSE	280
Barnes Butte	T. 14 S., R. 16 E., Sec. 28, WSW, NESE.	160
Powell Buttes for visuals, recreation, and wildlife	T. 16 S., R. 14 E., Sec. 1, SWSW;	40
	Sec. 12, NENE, WW, NSE, SWSE.	280
	T. 16 S., R. 15 E., Sec. 6, NWSE;	40
	Sec. 7, SWNW, NWSW.	80
Four miles north of Alfalfa, for recreation purposes	T. 16 S., R. 14 E., Sec. 35, SW.	160
1 mile south of Swartz Canyon, for wildlife, recreation, and to block up	T. 16 S., R. 15 E., Sec. 26, SESW, SWSE;	80
	Sec. 35, NWNE, NENW.	80
Prineville Reservoir, for wildlife, recreation, and to block up	T. 16 S., R. 16 E., Sec. 36, N, SW, ESE.	600
	T. 16 S., R. 17 E., Sec. 13, SWNE, SNW, NSW;	200
	Sec. 29, WNE, ENW, SWNW, WSW, WSE;	360
	Sec. 32, WNE, SENE, NW, NSE;	400
	Sec. 33, ENW, NESW;	120
	Sec. 34, ESW, WSE, SESE;	200
	Sec. 35, WNW, ESW, WSE.	160
	T. 17 S., R. 17 E., Sec. 3, NNE;	80
	Sec. 8, NE, ESW, SWSW.	280
4 miles NE of Alfalfa, for wildlife, recreation, and to block up	T. 17 S., R. 15 E., Sec. 16, all.	640
Horse Butte, for wildlife, recreation, and to block up	T. 17 S., R. 15 E., Sec. 36, all.	640
One mile south of Williamson Creek, to block up	T. 18 S., R. 16 E., Sec. 18, WNE, SNW, NSW.	240
	<b>Subtotal</b>	8,120

Deschutes County		
Parcels	Legal Description	Acreage
Fremont, Squaw, McKenzie, Deep, and Buckhorn canyons to block up and provide a corridor for wildlife and recreation	T. 14 S., R. 11 E., Sec. 3, NWNE, ENW; Sec. 4, N; Sec. 5, ENE, SWNW, NESE; Sec. 6, ENE, SE; Sec. 7, E, EW; Sec. 8, WNE, NNW, SENW, NSE; Sec. 9, NE, SENW, ESW, SE; Sec. 10, NWNW; Sec. 13, WNE, NW, NSW, NWSE; Sec. 16, NW, NWSW; Sec. 17, ENE, ESE, SWSE; Sec. 20, NNE, ENW, NSW, NWSE; Sec. 21, NWNW; Sec. 22, SSE; Sec. 24, SNE, SNW, NENW, SW, SE; Sec. 25, all; Sec. 29, N; Sec. 33, NESE; Sec. 34, NSW; Sec. 35, NE; Sec. 36, N.	120 320 160 240 480 280 440 40 360 200 200 280 40 80 560 640 320 40 80 160 320
Adjoining the Grasslands to block up for management and for wildlife corridor	T. 14 S., R. 11 E., Sec. 2, NWNE, NW.	200
One mile north of Big Falls, to block up and provide a corridor for wildlife and recreation	T. 14 S., R. 12 E., Sec. 3, SWSW; Sec. 4, SSE.	40 80
One mile southeast of Odin Falls for Deschutes River recreation access	T. 14 S., R. 12 E., Sec. 36, NESW, NWSE.	80
Within a mile of Buckhorn Road for recreation trails	T. 14 S., R. 12 E., Sec. 29, the private lands within the S half; Sec. 32, NNW, NESW; Sec. 33, SWNE, SENW, ESW.	40 120 160
Area north of Smith Rocks State Parks for recreation trails	T. 14 S., R. 13 E., Sec. 1, NW; Sec. 2, SENE, WSW, SESW, NSE, SWSE.	160 280
Two miles southwest of O=Neil, for proposed recreation canal trail	T. 14 S., R. 13 E., Sec. 25, ESE, that portion East of the North Unit Canal; Sec. 36, E, that portion East of the North Unit Canal.	80 160
In close proximity to Hwy 126 for recreation trails	T. 15 S., R. 11 E., Sec. 1, SNE, SWSW; Sec. 2, NWNW; Sec. 3, SENE, NESE, SESW; Sec. 5, ENW, NESW.	120 40 120 120

Cline Buttes to block-up core	T. 15 S., R. 11 E., Sec. 11, SESE;	40
	Sec. 12, SWSW;	40
	Sec. 13, NWNW;	40
	Sec. 14, NENE;	40
	Sec. 24, SSW;	80
	Sec. 25, NNW.	80
	T. 15 S., R. 12 E., Sec. 8, SESW;	40
	Sec. 17, WNE, ENW, SSW, WSE;	320
	Sec. 20, NE, NW, NSW, SWSW;	440
	Sec. 21 WNW.	80
South of Cline Buttes for recreation trails	T. 15 S., R. 12 E., Sec. 20, ESE, SWSE;	120
	Sec. 21, SWSW;	80
	Sec. 28, N, NS;	480
	Sec. 29, NE, SNW, NSW, NSE, SESE;	440
	Sec. 30, WNE, SENE, ENW, NESE;	240
	Sec. 32, NNE.	80
East of Cline Buttes on the Deschutes River for river access	T. 15 S., R. 12 E., Sec. 25, NW, that portion west of the river;	80
	Sec. 36, NW, that portion west of the river;	80
	Sec. 35, SSE, that portion west of the river.	40
One mile SE of Roberts Field	T. 15 S., R. 13 E., Sec. 36, WNE, NNW, SWNW, WSW, SESW.	280
1 mile north of Tumalo Dam, for wildlife, recreation, and to block up	T. 16 S., R. 11 E., Sec. 4, SWSW;	40
	Sec. 16, NWNE, NNW, SENW, NESW;	200
	Sec. 17, NWNE.	40
East of Cline Buttes on the Deschutes River for river access	T. 16 S., R. 12 E., Sec. 9, SESW, SWSE, that portion west of the river.	20
Northeast of Bend, adjacent to North Unit Canal, for recreation trail	T. 17 S., R. 12 E., Sec. 11, SENE, ESE;	120
	Sec. 12, WNW, SENW;	120
	Sec. 14, ENE.	80
Mayfield pond area to block up and for recreation	T. 17 S., R. 13 E., Sec. 10, NW;	160
	Sec. 23, WNE, NENW, NESW, NWSE;	200
	Sec. 29, NWNE.	40
Four miles north of Alfalfa, for recreation purposes	T. 17 S., R. 14 E., Sec. 2, WNW;	80
	Sec. 3, NENE.	40
Two miles south of Dodds Road and adjacent to Hwy 20 as addition to proposed wilderness and travel links	T. 18 S., R. 13 E., Sec. 24, W, that portion East of Hwy 20;	160
	T. 18 S., R. 14 E., Sec. 16, N;	320
	Sec. 36, ENE, SWNE, WSW, WSE.	280

Millican area, for travel route linkages and connectivity	T. 19 S., R. 13 E., Sec. 13, SNE, SE;	240
	T. 19 S., R. 14 E., Sec. 3, SSW, SWSE; Sec. 18, WSW; Sec. 19, WNE, SENE, S; Sec. 20, SWNW, NESW, NSE, SESE; Sec. 21, SSW; Sec. 22, SS, NESE; Sec. 24, SESE; Sec. 25, WNE, SENE, WSW, SESW, NSE, SWSE; Sec. 26, ESESE; Sec. 27, NWNE; Sec. 28, NW, NSW; Sec. 29, NE; Sec. 33, ENE, SWNE, SWNW, SE; Sec. 35, all; Sec. 36, WNW, SWSNW, SW, ESE.	120 80 440 200 80 200 40 360 20 40 240 160 320 640 330
	T. 19 S., R. 15 E., Sec. 12, SE; Sec. 13, NNE; Sec. 14, all; Sec. 17, S; Sec. 18, NESE; Sec. 20, NNE; Sec. 30, SNW, S; Sec. 31, WW; Sec. 34, NSE, that portion north of Hwy 20; Sec. 35, S, that portion north of Hwy 20.	160 80 640 320 40 80 400 160 30 140
	T. 20 S., R. 14 E., Sec. 2, SN; Sec. 3, SNE, WSE; Sec. 10, W.	160 160 320
	T. 20 S., R. 15 E., Sec. 16, all; Sec. 17, S.	640 320
	<b>Subtotal</b>	19,340
<b>Jefferson County</b>		
<b>Parcels</b>	<b>Legal Description</b>	<b>Acreage</b>
East of Squaw Creek	T. 13 S., R. 11 E., Sec. 34, ENE, SE; Sec. 35, SNE, ESW, SWSW, WSE.	240 280
One mile SW of Steelhead Falls, to block up and provide a corridor for wildlife and recreation (Wild and Scenic River trail linkage)	T. 13 S., R. 12 E., Sec. 33, NWNE.	40
Adjacent to Crooked River National Wild and Scenic River for recreation access and river management	T. 13 S., R. 12 E., Sec. 10, SWNE, NWNW, ESE; Sec. 13, SWSW; Sec. 24, NWNE, NENW, ESE; Sec. 25, ENE, NESE. T. 13 S., R. 13 E., Sec. 30, WNW.	160 40 160 120 80
	<b>Subtotal</b>	1,120
	<b>Total</b>	28,580

**Deschutes County:**

- Southeast of Smith Rocks State Park, between Smith Rocks and O’Neil to block up and provide a corridor for wildlife and recreation. Parcels not identified, though based on canal and river proposed trail system.
- Three miles north of Old Tumalo Dam adjacent to Highway 30, to block up and provide a corridor for wildlife and recreation between Tumalo and Cline Buttes.
- In the area around Fremont and McKenzie Canyons, to block up and provide a corridor for wildlife and recreation between the Grasslands and Cline Buttes.
- Four miles north and 3 miles southwest of Alfalfa to block up and provide a corridor for wildlife and recreation.
- La Pine, for the purpose of developing and east-west wildlife migration corridor and squaring up corners.

**Jefferson County:** None

**Klamath County:** La Pine, for the purpose of developing and east-west wildlife migration corridor and squaring up corners.

## Alternative 2

### Lands Identified for Disposal

**Table D-6. Public Lands Available for Disposal in Alternative 2**

<b>Crook County</b>		
<b>Parcels</b>	<b>Legal Description</b>	<b>Acreage</b>
Grizzly Mountain	T.13S., R.15E., W.M., Oregon	
	Section 3: NW1/4SW1/4;	40
	15: NW1/4NW1/4, N1/2SW1/4;	120
	24: E1/2E1/2, SE1/4SW1/4, SW1/4SE1/4;	240
	25: W1/2NE1/4, NE1/4NW1/4, W1/2SW1/4;	200
	26: SE1/4NE1/4, E1/2SW1/4, SE1/4;	280
	27: NW1/4NE1/4;	40
	28: SE1/4SW1/4, SE1/4;	200
Allen Creek	32: NW1/4NE1/4.	40
	T.13S., R.16E., W.M., Oregon	
	Section 19: Lot 3, NE1/4SW1/4;	81.34
	20: S1/2S1/2, NW1/4SW1/4;	200
	21: N1/2NE1/4, SE1/4NE1/4, NE1/4SE1/4;	160
	29: NW1/4NE1/4, NE1/4NW1/4, SW1/4;	240
Northeast of Prineville	30: SE1/4;	160
	32: W1/2.	320
	T.14S., R.16E., W.M., Oregon	
	Section 1: Lots 1-3, S1/2NE1/4, SE1/4;	322.46
Southeast of Prineville	12: E1/2, SW1/4NW1/4, SW1/4;	520
	14: N1/2N1/2, SW1/4NW1/4, W1/2SW1/4, SE1/4SE1/4;	320
	22: NE1/4NE1/4.	40
	T.15S., R.16E., W.M., Oregon	
	Section 22: E1/2;	320
	30: SW1/4NE1/4; SE1/4SW1/4, W1/2SE1/4, SE1/4SE1/4;	200
	32: NW1/4NE1/4, NW1/4, N1/2SW1/4, SW1/4SW1/4.	320

South Ochoco Reservoir	T.15S., R.17E., W.M., Oregon Section 28: All; 32: All; 34: W1/2NW1/4, S1/2.	640 640 400
Davis Road Subdivisions	T.16S., R.16E., W.M., Oregon Section 2: Lot 1; 4: Lots 1-3, SE1/4NE1/4; 6: NW1/4SE1/4, SE1/4SE1/4; 12: SE1/4NE1/4; 13: S1/2SE1/2; 23: SW1/4NE1/4, NE1/4NW1/4, E1/2SW1/4; 24: S1/2SE1/4; 26: NE1/4, E1/2NW1/4, NE1/4SW1/4, N1/2SE1/4, SE1/4SE1/4; 27: E1/2NE1/4.	37.28 161.86 80 40 80 160 80 400 80
North Prineville Reservoir	T.16S., R.17E., W.M., Oregon Section 4: Lot 4; 6: Lot 1, Lot 2, Lot 5, Lot 8, S1/2NE1/4, SE1/4; 7: Lot 2, Lots 4-11, E1/2SW1/4, N1/2SE1/4; 8: N1/2, N1/2S1/2; 9: All; 15: N1/2, NW1/4SW1/4, SE1/4SE1/4; 16: NE1/4, S1/2NW1/4; 17: W1/2SW1/4; 18: Lot 1, Lot 2, E1/2NW1/4, SE1/4SW1/4, NE1/4SE1/4, S1/2SE1/4; 21: NW1/4NE1/4, N1/2NW1/4.	38.94 396.29 501.18 480 640 400 240 80 330.8 120
	<b>Total</b>	10,390
<b>Deschutes County</b>		
<b>Parcels</b>	<b>Legal Description</b>	<b>Acreage</b>
Terrebonne	T.14S., R.13E., W.M., Oregon * Section 29: Lot 1, Lot 4, SW1/4NE1/4, NE1/4NW1/4, E1/2SE1/4; * 30: Lot 6, SW1/4NE1/4NW1/4, W1/2SE1/4NW1/4, W1/2NE1/4SW1/4, SE1/4SW1/4; * 31: E1/2 W1/2.	205 110.69 160
Redmond	T.15S., R.13E., W.M., Oregon * Section 21: E1/2SE1/4SW1/4, W1/2SW1/4SE1/4; * 33: All; * 34: W1/2W1/2.	40 640 160
Deschutes Junction	T.16S., R.12E., W.M., Oregon * Section 13: SW1/4NE1/4, SE1/4SW1/4, SE1/2 (that portion within one-quarter mile of the railroad track); * 24: NW1/4NE1/4 (that portion within one-quarter mile east of the railroad track), E1/2NW1/4 (that portion within one-quarter mile of the railroad track), NE1/4SW1/4 (that portion within one-quarter mile east of the railroad track).	160 128.7

South of Redmond Airport	T.16S., R.13E., W.M., Oregon	
	* Section 4: All;	364.97
	* 5: All;	366.35
	* 6: SE/14 (that portion east of one quarter-mile east of the railroad track);	65.31
	* 7 Lot 4 (that portion east of one quarter-mile east of the railroad track), NE1/4 (that portion east of one quarter-mile east of the railroad track), E/2NW1/4 (that portion east of one quarter-mile east of the railroad track), E1/2SW1/4 (that portion east of one quarter-mile east of the railroad track), SE;	358.4
La Pine	* 8: All;	640
	* 9: All;	640
	*18: NW1/4NW1/4 (that portion within one-quarter mile east of the railroad track).	11.2
	T.21S., R.10E., W.M., Oregon	
	Section 33: W1/2SE1/4;	80
La Pine	34: SW1/4SE1/4, E1/2SE1/4;	120
	35: E1/2SE1/4.	80
	T.22S., R.10E., W.M., Oregon	
	* Section 1: all east of Hwy 97;	477.32
	2: Lot 6;	9.21
La Pine	3: Lot 1, Lot 2;	80.83
	5: N1/2SE1/4;	80
	* 11: that portion of the NE1/4 lying east of Hwy 97;	40
	* 12: N1/2, the portion of the S1/2 lying east of the Burlington Northern rail road;	610
	* 13: E1/2NW1/4, E1/2SW1/4.	160
La Pine	T.22S., R.11E., W.M., Oregon	
	* Section 6: All;	620.68
	* 7: Lots 1-4, E1/2W1/2.	296.4
	<b>Subtotal</b>	6,710
	<b>Total All</b>	17,100

# Alternative 3

## Lands Identified for Disposal

Table D-7 Public Lands Available for Disposal in Alternative 3

Crook County		
Parcels	Legal Description	Acreage
Grizzly Mountain	T.13S., R.15E. W.M., Oregon Section 3: NW1/4SW1/4; 15: NW1/4NW1/4, N1/2SW1/4; 24: E1/2E1/2, SE1/4SW1/4, SW1/4SE1/4; 25: W1/2NE1/4, NE1/4NW1/4, W1/2SW1/4; 26: SE1/4NE1/4, E1/2SW1/4, SE1/4; 27: NW1/4NE1/4; 28: SE1/4SW1/4, SE1/4; 32: NW1/4NE1/4.	40 120 240 200 280 40 200 40
Allen Creek	T.13S., R.16E. W.M., Oregon Section 19: Lot 3, NE1/4SW1/4; 20: S1/2S1/2, NW1/4SW1/4; 21: N1/2NE1/4, SE1/4NE1/4, NE1/4SE1/4; 29: NW1/4NE1/4, NE1/4NW1/4, SW1/4; 30: SE1/4; 32: W1/2.	81.34 200 160 240 160 320
Northeast of Prineville	T.14S., R.16E. W.M., Oregon Section 1: Lots 1-3, S1/2NE1/4, SE1/4; 12: E1/2, SW1/4NW1/4, SW1/4; 14: N1/2N1/2, SW1/4NW1/4, W1/2SW1/4, SE1/4SE1/4; 22: NE1/4NE1/4; * 28: NE1/4SW1/4, NW1/4SE1/4, S1/2SE1/4.	322.46 520 320 40 160
Southeast of Prineville	T.15S., R.16E., W.M., Oregon Section 22: E1/2; 30: SW1/4NE1/4; SE1/4SW1/4, W1/2SE1/4, SE1/4SE1/4; 32: NW1/4NE1/4, NW1/4, N1/2SW1/4, SW1/4SW1/4; 34: All.	320 200 320 640
Davis Road Subdivisions	T.16S., R.16E., W.M., Oregon Section 2: Lot 1; 4: Lots 1-3, SE1/4NE1/4; 6: NW1/4SE1/4, SE1/4SE1/4; 27: E1/2NE1/4.	37.28 161.86 80 80
North Prineville Reservoir	T.16S., R.17E., W.M., Oregon Section 6: Lot 5, Lot 8.	87
	<b>Total</b>	5,610
Deschutes County		
Parcels	Legal Description	Acreage
Terrebonne	T.14S., R.13E., W.M., Oregon Section 29: Lot 1, Lot 4, SW1/4NE1/4, NE1/4NW1/4, E1/2SE1/4.	205

La Pine	T.22S., R.10E., W.M., Oregon	
	* Section 1: W1/2NE1/4, NW1/4 (that portion lying east of the railroad track), SW1/4 (that portion lying east of the railroad track), W1/2SE1/4;	317.32
	* 2: Lot 6;	9.21
	* 11: the portion of the NE1/4 lying east of Hwy 97;	160
	* 12: W1/2NE1/4, NW1/4, the portion of the SW1/4 lying east of the Burlington Northern rail road, W1/2SE1/4;	460
	13: E1/2W1/2;	160
	23: N1/2N1/2, SW1/4NW1/4;	200
	24: N1/2NW1/4.	80
	<b>Subtotal</b>	1,590
	<b>Total All</b>	7,200

## Alternative 4

### Lands Identified for Disposal

Table D-8. Public Lands Available for Disposal in Alternative 4

Crook County		
Parcels	Legal Description	Acreage
Northeast of Prineville	T.14S., R.16E. W.M., Oregon Section 28: NE1/4SW1/4, NW1/4SE1/4, S1/2SE1/4.	160
North Ochoco Reservoir	T.14S., R.17E., W.M., Oregon Section 32: All.	640
Southwest of Prineville	T.15S., R.15E., W.M., Oregon Section 31: Lot 4, SE1/4SW1/4.	79.9
Southeast of Prineville	T.15S., R.16E., W.M., Oregon Section 22: E1/2;	320
	30: SW1/4NE1/4; SE1/4SW1/4, W1/2SE1/4, SE1/4SE1/4;	200
	32: NW1/4NE1/4, NW1/4, N1/2SW1/4, SW1/4SW1/4;	320
	34: All.	640
South Ochoco Reservoir	T.15S., R.17E., W.M., Oregon Section 28: All;	640
	32: All;	640
	34: W1/2NW1/4, S1/2.	400
Davis Road Subdivisions	T.16S., R.16E., W.M., Oregon Section 2: Lot 1;	37.28
	4: Lots 1-3, SE1/4NE1/4;	161.86
	6: NW1/4SE1/4, SE1/4SE1/4;	80
	12: SE1/4NE1/4;	40
	13: S1/2SE1/2;	80
	22: SW1/4SW1/4;	40
	23: SW1/4NE1/4, NE1/4NW1/4, E1/2SW1/4;	160
	24: S1/2SE1/4;	80
	26: NE1/4, E1/2NW1/4, NE1/4SW1/4, N1/2SE1/4, SE1/4SE1/4;	400
	27: SE1/4SW1/4, E1/2NE1/4.	120

North Prineville Reservoir	T.16S., R.17E., W.M., Oregon Section 4: Lot 4; 6: Lot 1, Lot 2, Lot 5, Lot 8, S1/2NE1/4, SE1/4; 7: Lot 2, Lots 4-11, N1/2SE1/4, E1/2SW1/4; 8: N1/2, N1/2S1/2; 9: All; 16: NE1/4, S1/2NW1/4; 17: W1/2SW1/4; 18: Lot 1, Lot 2, E1/2NW1/4, SE1/4SW1/4, NE1/4SE1/4, S1/2SE1/4	38.94 396.29 501.18 480 640 240 80 330.8
	Total	7,950
<b>Deschutes County</b>		
<b>Parcels</b>	<b>Legal Description</b>	<b>Acreage</b>
Terrebonne	T.14S., R.13E., W.M., Oregon Section 29: Lot 1, Lot 4, SW1/4NE1/4, NE1/4NW1/4, E1/2SE1/4.	205
Redmond	T.15S., R.13E., W.M., Oregon * Section 33: All; * 34: W1/2W1/2.	640 160
Deschutes Junction	T.16S., R.12E., W.M., Oregon *Section 13:SW1/4NE1/4, SE1/4SW1/4, SE1/2 (that portion within one-quarter mile of the railroad track); *Section 24: NW1/4NE1/4 (that portion within one-quarter mile east of the railroad track), E1/2NW1/4 (that portion within one-quarter mile of the railroad track), NE1/4SW1/4 (that portion within one-quarter mile east of the railroad track).	160  128.7
South of Redmond Airport	T.16S., R.13E., W.M., Oregon * Section 4: All; * 5: All; * 6: SE1/4 (that portion east of one quarter-mile east of the railroad track); * 7: Lot 4 (that portion east of one quarter-mile east of the railroad track), NE1/4 (that portion east of one quarter-mile east of the railroad track), E1/2NW1/4 (that portion east of one quarter-mile east of the railroad track), E1/2SW1/4 (that portion east of one quarter-mile east of the railroad track), SE1/4; * 8: All; * 9: All; *18: NW1/4NW1/4 (that portion within one-quarter mile east of the railroad track).	364.97 366.35  65.31  358.4 640 640 11.2
La Pine	T.22S., R.10E., W.M., Oregon * Section 1: Tract 37; * 2: Lot 6; *11: NE1/4 (that portion lying east of Hwy 97); *12: N1/2, S1/2 (that portion lying east of the railroad track); * 15: W1/2.	477.32 9.21 89.99 603.8 320
La Pine	T.22S., R.11E., W.M., Oregon * Section 6: All; * 7: Lots 1-4, E1/2W1/2.	620.68 296.4
	Total	6,160
	<b>Total All</b>	<b>14,110</b>

# Alternative 5

## Lands Identified for Disposal

Table D-9. Public Lands Available for Disposal in Alternative 5		
Crook County		
Parcels	Legal Description	Acreage
Grizzly Mountain	T.13S., R.15E. W.M., Oregon	
	Section 3: NW1/4SW1/4;	40
	15: NW1/4NW1/4, N1/2SW1/4;	120
	24: E1/2E1/2, SE1/4SW1/4, SW1/4SE1/4;	240
	25: W1/2NE1/4, NE1/4NW1/4, W1/2SW1/4;	200
	26: SE1/4NE1/4, E1/2SW1/4, SE1/4;	280
	27: NW1/4NE1/4;	40
	28: SE1/4SW1/4, SE1/4;	200
Allen Creek	32: NW1/4NE1/4.	40
	T.13S., R.16E. W.M., Oregon	
	Section 19: Lot 3, NE1/4SW1/4;	81.34
	20: S1/2S1/2, NW1/4SW1/4;	200
	21: N1/2NE1/4, SE1/4NE1/4, NE1/4SE1/4;	160
	29: NW1/4NE1/4, NE1/4NW1/4, SW1/4;	240
	30: SE1/4;	160
	32: W1/2.	320
Northeast of Prineville	T.14S., R.16E. W.M., Oregon	
	Section 1: Lots 1-3, S1/2NE1/4, SE1/4;	322.46
	12: E1/2, SW1/4NW1/4, SW1/4;	520
	14: N1/2N1/2, SW1/4NW1/4, W1/2SW1/4, E1/4SE1/4;	320
	22: NE1/4NE1/4;	40
	* 28: NE1/4SW1/4, NW1/4SE1/4, S1/2SE1/4.	160
Southwest of Prineville	T.15S., R.15E., W.M., Oregon	
	Section 31: Lot 4, SE1/4SW1/4.	79.9
Southeast of Prineville	T.15S., R.16E., W.M., Oregon	
	Section 22: E1/2;	320
	30: SW1/4NE1/4; SE1/4SW1/4, W1/2SE1/4, SE1/4SE1/4;	200
	32: NW1/4NE1/4, NW1/4, N1/2SW1/4, SW1/4SW1/4.	320
Davis Road Subdivisions	T.16S., R.16E., W.M., Oregon	
	Section 2: Lot 1;	37.28
	4: Lots 1-3, SE1/4NE1/4;	161.86
	6: Lot 5, NW1/4SE1/4, SE1/4SE1/4;	119.04
	21: NE1/4, NE1/4SE1/4;	200
		40
	22: SW1/4SW1/4;	160
	23: E1/2SW1/4, SW1/4NE1/4, NE1/4NW1/4;	
	26: SE1/4SE1/4, N1/2SE1/4, NE1/4SW1/4, E1/2NW1/4, NE1/4;	400
		120
	27: SE1/4SW1/4, E1/2NE1/4;	120
	28: NW1/4SE1/4, S1/2SE1/4.	
Total		5,960

<b>Deschutes County</b>		
<b>Parcels</b>	<b>Legal Description</b>	<b>Acreage</b>
Terrebonne	T.14S., R.13E., W.M., Oregon Section 29: Lot 1, Lot 4, SW1/4NE1/4, NE1/4NW1/4, E1/2SE1/4; 30: Lot 6, SW1/4NE1/4NW1/4, W1/2SE1/4NW1/4, W1/2NE1/4SW1/4, SE1/4SW1/4; 31: E1/2 W1/2.	205 110.69 160
Cline Buttes	T.15S., R.12E., W.M., Oregon * Section 9: SW1/4, S1/2SE1/4; * 10: SW1/4SW1/4; * 15: W1/2.	240 40 320
Redmond	T.15S., R.13E., W.M., Oregon Section 1: the portion west of North Unit main canal; 12: the portion west of North Unit main canal; 13: the portion west of North Unit main canal; 23: the portion of E1/2SE1/4 west of North Unit main canal; 24: the portion west of North Unit main canal; 26: E1/2NE1/4NW1/4NE1/4 (that portion west of North Unit main canal), SE1/4NW1/4NE1/4 (that portion west of North Unit main canal), S1/2SW1/4NW1/4NE1/4, SW1/4NE1/4 (that portion west of North Unit main canal), S1/2 (that portion west of North Unit main canal); 33: N1/2, N1/2S1/2; 34: N1/2, N1/2S1/2.	520 480 300 60 160  300 480 480
Deschutes Junction	T.16S., R.12E., W.M., Oregon Section 13: SW1/4NE1/4, SE1/4SW1/4, SE1/2 (that portion within one-quarter mile of the railroad track); 24: NW1/4NE1/4 (that portion within one-quarter mile east of the railroad track), E1/2NW1/4 (that portion within one-quarter mile of the railroad track), NE1/4SW1/4 (that portion within one-quarter mile east of the railroad track).	160  128.7
South of Redmond Airport	T.16S., R.13E., W.M., Oregon * Section 18: NW1/4NW1/4 (that portion within one-quarter mile east of the railroad track).	11.2
	Total	4,160
	<b>Total All</b>	10,120

# Alternative 6

## Lands Identified for Disposal

Table D-10. Public Lands Available for Disposal in Alternative 6

Crook County		
Parcels	Legal Description	Acreage
Grizzly Mountain	T.13S., R.15E. W.M., Oregon	
	Section 3: NW1/4SW1/4;	40
	15: NW1/4NW1/4, N1/2SW1/4;	120
	24: E1/2E1/2, SE1/4SW1/4, SW1/4SE1/4;	240
	25: W1/2NE1/4, NE1/4NW1/4, W1/2SW1/4,;	200
	26: SE1/4NE1/4, E1/2SW1/4, SE1/4;	280
	27: NW1/4NE1/4;	40
	28: SE1/4SW1/4, SE1/4;	200
Allen Creek	32: NW1/4NE1/4.	40
	T.13S., R.16E. W.M., Oregon	
	Section 19: Lot 3, NE1/4SW1/4;	81.34
	20: S1/2S1/2, NW1/4SW1/4;	200
	21: N1/2NE1/4, SE1/4NE1/4, NE1/4SE1/4;	160
	29: NW1/4NE1/4, NE1/4NW1/4, SW1/4;	240
	30: SE1/4;	160
	32: W1/2.	320
Northeast of Prineville	T.14S., R.16E. W.M., Oregon	
	Section 1: Lots 1-3, S1/2NE1/4, SE1/4;	322.46
	12: E1/2, SW1/4NW1/4, SW1/4;	520
	14: N1/2N1/2, SW1/4NW1/4, W1/2SW1/4, SE1/4SE1/4;	320
	22: NE1/4NE1/4;	40
North Ochoco Reservoir	28: NE1/4SW1/4, NW1/4SE1/4, S1/2SE1/4	160
	T.14S., R.17E., W.M., Oregon	
Southwest of Prineville	Section 32: All.	640
	T.15S., R.15E., W.M., Oregon	
Southeast of Prineville	Section 31: Lot 4, SE1/4SW1/4.	79.9
	T.15S., R.16E., W.M., Oregon	
	Section 22: E1/2;	320
	30: SW1/4NE1/4; SE1/4SW1/4, W1/2SE1/4, SE1/4SE1/4;	200
South Ochoco Reservoir	32: NW1/4NE1/4, NW1/4, N1/2SW1/4, SW1/4SW1/4.	320
	T.15S., R.17E., W.M., Oregon	
	Section 28: All;	640
	32: All;	640
	34: W1/2NW1/4, S1/2.	400

Davis Road Subdivisions	T.16S., R.16E., W.M., Oregon	
	Section 2: Lot 1;	37.28
	4: Lots 1-3, SE1/4NE1/4;	161.86
	6: NW1/4SE1/4, SE1/4SE1/4;	80
	12: SE1/4NE1/4;	40
	13: S1/2SE1/2;	80
	21: NE1/4, NE1/4SE1/4;	200
	22: SW1/4SW1/4;	40
	23: SW1/4NE1/4, NE1/4NW1/4, E1/2SW1/4;	160
	24: S1/2SE1/4;	80
North Prineville Reservoir	26: NE1/4, E1/2NW1/4, NE1/4SW1/4, N1/2SE1/4, SE1/4SE1/4;	400
	27: SE1/4SW1/4, E1/2NE1/4;	120
	28: NW1/4SE1/4, S1/2SE1/4.	120
	T.16S., R.17E., W.M., Oregon	
	Section 4: Lot 4;	38.94
	6: Lot 1, Lot 2, Lot 5, Lot 8, S1/2NE1/4, SE1/4;	396.29
	7: Lot 2, Lots 4-11, E1/2SW1/4, N1/2SE1/4;	501.18
	8: N1/2, N1/2S1/2;	480
	9: All;	640
	15: N1/2, NW1/4SW1/4, SE1/4SE1/4;	400
	16: NE1/4, S1/2NW1/4;	240
	17: W1/2SW1/4;	80
	18: Lot 1, Lot 2, E1/2NW1/4, SE1/4SW1/4, NE1/4SE1/4, S1/2SE1/4.	330.8
Total		11,550
<b>Deschutes County</b>		
<b>Parcels</b>	<b>Legal Description</b>	<b>Acreage</b>
Terrebonne	T.14S., R.13E., W.M., Oregon Section 29: Lot 1, Lot 4, SW1/4NE1/4, NE1/4NW1/4, E1/2SE1/4.	205
Cline Buttes	T.15S., R.12E., W.M., Oregon * Section 9: SW1/4, S1/2SE1/4; * 10: SW1/4SW1/4; * 15: W1/2.	120 40 320
Redmond	T.15S., R.13E., W.M., Oregon * Section 1: the portion west of North Unit main canal; * 12: the portion west of North Unit main canal; * 13: the portion west of North Unit main canal; * 23: the portion of E1/2SE1/4 west of North Unit main canal; * 24: the portion west of North Unit main canal; * 26: E1/2NE1/4NW1/4NE1/4 (that portion west of North Unit main canal), SE1/4NW1/4NE1/4 (that portion west of North Unit main canal), S1/2SW1/4NW1/4NE1/4, SW1/4NE1/4 (that portion west of North Unit main canal), S1/2 (that portion west of North Unit main canal); * 35: NW1/4NE1/4, N1/2NW1/4.	520 480 300 60 160 300 120

Deschutes Junction	T.16S., R.12E., W.M., Oregon * Section 13: SW1/4NE1/4, SE1/4SW1/4, SE1/2 (that portion within one-quarter mile of the railroad track); * 24: NW1/4NE1/4 (that portion within one-quarter mile east of the railroad track), E1/2NW1/4 (that portion within one-quarter mile of the railroad track), NE1/4SW1/4 (that portion within one-quarter mile east of the railroad track).	160
		128.7
South of Redmond Airport	T.16S., R.13E., W.M., Oregon Section 18: NW1/4NW1/4 (that portion within one-quarter mile east of the railroad track).	11.2
Bend Airport	T. 17S., R.13E., W.M., Oregon Section 20: SW1/4SE1/4; 21: W1/2SW1/2; 28: N1/2NW1/4, SW1/4NW1/4, NW1/4SW1/4; 29: E1/2NE1/4, SW1/4NE1/4, E1/2NW1/4, SW1/4NW1/4, E1/2SW1/4, SE1/4.	40
		80
		160
		480
La Pine	T.21S., R.10E., W.M., Oregon Section 33: W1/2SE1/4; 34: E1/2SE1/4, SW1/4SE1/4.	80
		120
La Pine	T.22S., R.10E., W.M., Oregon * Section 2: Lot 5; 3: Lot 1, Lot 2; 5: N1/2SE1/4; 10: SE1/4NE1/4, NE1/4SW1/4, NW1/4SE1/4; 11: the portion of the NE1/4NW1/4 lying west of Huntington Rd, the portion of the SW1/4NW1/4 lying west of Huntington Rd;	30.81
		80.83
		80
		120
		60
	Total	4,260
	<b>Total All</b>	<b>15,810</b>

# Alternative 7

## Lands Identified for Disposal

Table D-11. Public Lands Available for Disposal in Alternative 7		
Crook County		
Parcels	Legal Description	Acreage
Grizzly Mountain	T.13S., R.15E. W.M., Oregon	
	Section 3: NW1/4SW1/4;	40
	15: NW1/4NW1/4, N1/2SW1/4;	120
	24: E1/2E1/2, SE1/4SW1/4, SW1/4SE1/4;	240
	25: W1/2NE1/4, NE1/4NW1/4;	120
	27: NW1/4NE1/4;	40
	28: SE1/4SW1/4, SE1/4;	200
	32: NW1/4NE1/4.	40
Allen Creek	T.13S., R.16E. W.M., Oregon	
	Section 19: Lot 3, NE1/4SW1/4;	81.34
	20: NW1/4SW1/4, S1/2S1/2;	200
	21: N1/2NE1/4, SE1/4NE1/4, NE1/4SE1/4;	160
	29: NW1/4NE1/4, NE1/4NW1/4, SW1/4;	240
	30: SE1/4;	160
Northeast of Prineville	T.14S., R.16E. W.M., Oregon	
	Section 1: Lots 1-3, S1/2NE1/4, SE1/4;	322.46
	12: E1/2, SW1/4NW1/4, SW1/4;	520
	14: N1/2N1/2, SW1/4NW1/4, W1/2SW1/4, SE1/4SE1/4;	320
	22: NE1/4NE1/4;	40
	28: NE1/4SW1/4, NW1/4SE1/4, S1/2SE1/4.	160
	Total	3,320
Deschutes County		
Parcels	Legal Description	Acreage
Redmond	T.15S., R.13E., W.M., Oregon	
	* Section 1: the portion west of North Unit main canal;	520
	* 12: the portion west of North Unit main canal;	480
	* 13: the portion west of North Unit main canal;	300
	* 33: all.	640
Deschutes Junction	.16S., R.12E., W.M., Oregon	
	* Section 13: SW1/4NE1/4, SE1/4SW1/4, SE1/2 (that portion within one-quarter mile of the railroad track);	160
	* 24: NW1/4NE1/4 (that portion within one-quarter mile east of the railroad track), E1/2NW1/4 (that portion within one-quarter mile of the railroad track), NE1/4SW1/4 (that portion within one-quarter mile east of the railroad track).	128.7
South of Redmond Airport	T.16S., R.13E., W.M., Oregon * Section 18: NW1/4NW1/4 (that portion within one-quarter mile east of the railroad track)	11.2

La Pine	T.21S., R.10E., W.M., Oregon Section 33: W1/2SE1/4; 34: SW1/4SE1/4, E1/2SE1/4; 35: E1/2SE1/4.	80 120 80
La Pine	T.22S., R.10E., W.M., Oregon * Section 1: Tract 37; * 2: Lot 6; 3: Lot 1, Lot 2; 5: N1/2SE1/4; *11: that portion of the NE1/2 lying east of Hwy 97; *12: N1/2, the portion of the S1/2 lying east of the Burlington Northern rail road; 22: Lot 1 (that portion E of Hwy 97), E1/2NW1/4 (that portion E of Hwy 97), E1/2NE1/4SW1/4, NW1/4NE1/4SW1/4 (that portion E of Hwy 97), E1/2NW1/4SW1/4 (that portion E of Hwy 97), W1/2NE1/4SW1/4SW1/4 (that portion E of Hwy 97), W1/2SW1/4SW1/4 (that portion E of Hwy 97), SE1/4SW1/4SW1/4, E1/2SE1/4SW1/4, E1/2W1/2SE1/4SW1/4.	477.32 9.21 80.83 80 89.99  603.8          100
La Pine	T.22S., R.11E., W.M., Oregon * Section 7: Lots 1-4, E1/2W1/2.	296.4
	Total	4,260
	Total All	7,580

# Appendix E

## 303(d) Listed Streams by Sub-basin

Stream Name	River Mile	Approximate Location	Listed Parameter
<b>Little Deschutes Sub-basin</b>			
Crescent Creek	0-26.1	Mouth to Crescent Lake	Temperature
Little Deschutes River	54-78		Temperature
	0-54		Dissolved Oxygen
Paulina Cr.	0-13.2	Mouth to Paulina Lake	Temperature
<b>Upper Deschutes Sub-basin</b>			
Deschutes River	126.4-162.6	Upstream of Squaw to upstream of Tumalo	Temperature, pH
	189.4-222.4	Sunriver to Upstream of Bull Bend	Sediment, turbidity, dissolved oxygen
Squaw Creek	0-21		temperature
<b>Lower Crooked Sub-basin</b>			
Crooked River	0-51	Mouth to Baldwin Dam	Bacteria (fecal coliform), pH, temperature
	51-70	Baldwin Dam to Prineville Reservoir	Total Dissolved Gas
McKay Creek	0-14.7	Mouth to Little McKay Cr.	Temperature
Marks Creek	0-17.1		Temperature
Mill Creek	0-11.5	Mouth to E./W. Forks	Temperature
Ochoco Cr.	0-36.4	Mouth to Camp Branch	Temperature
<b>Upper Crooked Sub-basin</b>			
Crooked River	82.6-109.2	Upstream of Deer Cr. to N.Fk. Crooked River	Temperature, pH
Bear Creek	0-34.3	Mouth to Headwaters	Temperature



# Appendix F: Best Management Practices

## Introduction

The following Best Management Practices, considered to be the most applicable to the planning area, were derived from a number of sources including: BLM OR/WA Manuals and Handbooks, Oregon Forest Practice Rules (Oregon Department of Forestry, 1980), Moll (1999), and internal and RMP scoping comments.

## Road Construction and Maintenance Guidelines

Additional, more detailed specifications, concerning all aspects of road design, construction and maintenance are located in BLM Manuals 9113 - Roads, and 5420 - Preparation For Sale (Timber).

New BLM system road construction would focus on redesigning existing road systems for better access efficiency, recreation use, reduction in conflicts with adjacent landowners, and resource protection. Road system management would include maintaining existing roads, seasonal closures, permanent closures and rehabilitation of roads.. Existing system roads would be maintained for proper water drainage and long-term service.

Any new roads would be designed to minimum standards consistent with the proposed use and traffic safety. Surfaced roads would include some county roads, roads receiving heavy use by the public, and some approved road rights-of-way. When designing long-term road networks, existing roads would be incorporated to the maximum extent possible unless new roads offer better long term conditions for resource conservation, visual resources, recreation or reductions in conflicts with adjacent landowners.

Road location would be designed to follow the terrain to minimize excavation to the essential amount needed to meet necessary road standards. Whenever possible, roads would be located away from streams, meadows, and riparian areas. Appropriate drainage structures would be incorporated into construction or reconstruction design.

Cut and fill slopes would be revegetated, preferably with native vegetation, to stabilize the slopes and reduce erosion. Seeding or planting would be done the first fall season following construction of long-term roads.

A local road with a design speed of 20 mph or less should be outslopped for sections where the grade does not exceed 6%. Outslopping roads is not recommended unless the subgrade materials are resistant to erosion and traffic volume is extremely low. All other roads should be crowned to ensure proper drainage.

Side ditches should be constructed adjacent to, and parallel with, the roadway shoulder. The ditch collects runoff from the roadway and from adjacent upslope areas. The shape and dimensions of the ditch are selected to carry adequately the anticipated runoff from a major storm without saturation of subgrade or surfacing material.

Where overtopping of the road could occur, a dip or grade roll should be designed to ensure that the overtopping flow crosses the road at a point that minimizes erosion (erodible-resistant surfacing is often added), and so that flow is not diverted along the road or away from its natural flow path.

For low-volume roads, surface cross drains provide an economical alternative to using ditches and culverts. Surface cross drains can be designed into any shape road surface template to divert water collecting on and running down the traveled surface. Surface dips are not recommended for grades over ten percent because of the steepness of the dip approach grade that would be required. They may also be used to relieve ditches and the inside edge of insloped roadways without ditches. Ditch dams are used to direct ditch water into the cross drain. Surface cross drains should be located at intervals close enough to prevent volume concentration that causes surface erosion or unstable slopes. Cross drains should be constructed with an outslope grade of 3 to 5 percent or equal to the existing out-slope grade. In colder climates where snow and ice create driving hazards, the outslope grade should be reduced. For drivable dips, the minimum freeboard should be 150 millimeters with a roll-out length of at least 6 meters. If the dip is unarmored, freeboard should be increased to allow for the tendency of the dip to lose its shape due to traffic. Drain dips and drivable water bars negotiable by high-clearance vehicles have steeper rollout grades. The above values should be adjusted according to local climate. Locate cross drains far enough above stream crossings to avoid releasing drainage water directly into stream channels. Surface and ditch water should be diverted and dispersed before it enters streams using lead-out ditches, settlement ponds, ditch dams, surface shaping, or other measures. Cross drains and outlets should be armored where soils are highly erodible or provide poor traffic support during wet weather use.

Dip orientation (skewed or perpendicular to the road centerline) depends on the type of traffic expected, length of the dip, and road grade. If dips are shorter and the traffic will include larger trucks with longer frames, then the dips should be oriented perpendicular to the direction of traffic. Dips skewed from perpendicular to centerline more effectively drain steep road grades, are more comfortable for vehicle occupants, and, if long enough, will not cause severe twisting of truck frames.

Culverts would be designed for all streams to pass a 100-year flood. Culverts would be designed for minimum impact on aquatic life. Open bottom shapes should be used if it is necessary to maintain the character of the streambed and would be the preferred option for fish-bearing streams. If a closed bottom shape is used in a fish-bearing stream, the type, size and gradient of the culvert should be assessed using the most current method of design for fish passage. Open-topped culverts, and slotted culvert pipes may be oriented from 60 to 90 degrees to the direction of travel. Rock or other appropriate lining would be provided for culvert outlet basins.

Waterbars would be installed on skid trails and temporary roads where there is potential for erosion due to soil type, terrain features, or future human uses. Waterbars are typically used in closed-off areas with little traffic, and should be oriented to lead the flow from the surface. One rule of thumb is to add five to the percent road grade and orient the waterbar at that many degrees off perpendicular.

All roads would be maintained during logging, mining, or other activities involving heavy vehicles or multiple trips. Roads would be maintained during and immediately after use periods as needed to control erosion and road degradation. Maintenance activities could include reconstruction, snow plowing, grading, cleaning ditches and culverts, installing new drainage structures, and replacing surfacing. Maintenance frequency would depend on traffic, weather, road condition, and soil type. During heavy industrial use, roads would be monitored during wet conditions and temporarily closed, if necessary, to prevent excessive damage.

All necessary road permits and road use agreements would be obtained before beginning industrial operations. Individual road use permits, agreements, contracts, and right-of-way grants would provide detailed stipulations for road use and maintenance for specific roads.

Temporary access roads would be closed and stabilized by a combination of the following methods: signing, blocking, disguising, scarifying, waterbarring, seeding, and mulching.

Design drainage ditches, waterbars, drain dips, culvert placement, etc. in a manner that will disperse run-off and minimize cut and fill erosion. Design of drainage ditches, waterbars, etc. will be done in a manner to ensure safety for road users.

Blocking and disguising would utilize large logs, branches, stumps, and/or boulders found in the local vicinity. Trees cut from adjacent areas may also be imported to facilitate road closures and rehabilitation.

Closed and obliterated road beds would be recontoured to match the adjacent natural slope.

## Background of Road Influences on Hydrology

Proper drainage, from a watershed standpoint, is minimizing the cumulative volume-distance quantity of displacement by appropriate road and drainage feature location and design, coupled with appropriate routine maintenance. Three main components of proper drainage provision are: road location and design; drainage feature type, location, and design; and appropriate routine maintenance. Proper drainage provision is accomplished on each unique road segment by ensuring location and design of road alignments and drainage features minimize changes to natural disposition of precipitation and groundwater. Road location must consider alignments, template geometry, aspect, location on hillside, geology, climate, vegetation, operational requirements, season of use, and management activities on surrounding terrain. Drainage feature considerations include type, spacing and shaping, applicability of drainage schemes to site conditions, including investigation of opportunities on the ground for minimizing water concentrations and their effects on areas adjacent to the road segment.

Appropriate routine maintenance ensures such drainage provision remains functional. Drainage features are tailored to site specific characteristics on each unique segment, within limitations dictated by access needs and safety requirements. Every opportunity is considered for minimizing water concentrations and related effects on surroundings by treatments that isolate contributing areas, whether on adjoining road segments or different parts of the cross section template on the same segment.

The simplest, most economical, and most effective technique for minimizing water displacement due to the typical segment involves addition of surface cross drainage. Here, the total water volume displaced may not be reduced much, but it is broken into smaller increments, travels a shorter distance during displacement, and is more quickly and easily absorbed into down slope locations, potentially lowering cumulative volume distance displacement. Surface cross drains consist of surface shaping and devices designed to capture water that collects on, and drains down, the road and release it in a manner that minimizes effects to adjacent areas and the watershed. Surface shaping includes broad-based (drivable) dips, waterbars, and rolls in profile (twist of crown or inslope templates to outslope and back again). Devices include open top or slotted culverts, metal waterbars, and rubber water diverters.

## **Machine Operations (i.e. logging, mining, utility and facility installations)**

Machine operations would be timed to minimize adverse impacts to other resources. Timing of operations on a daily and seasonal basis would include such concerns as sensitive soils, proximity to residences and recreational sites/designated trails, cultural resources, and special status plant and animal species.

Operations would be designed and implemented to minimize the loss of site productivity caused by soil compaction, displacement, or erosion.

Areas with sensitive soils or ground resources of special concern would be protected by logging with low-impact harvest techniques such as: designated skid trails; directional felling; boom mounted shears; harvester/forwarders; smaller, more maneuverable or low ground pressure equipment; logging during the dry season (between June 1 and October 31); and logging over a protective cover of snow and/or frozen ground.

Tractor skidding would normally be limited to slopes of less than 35%. Soil moisture conditions would be monitored and operations would be suspended before excessive compaction or displacement occurs.

Landings would be the minimum size commensurate with safety and equipment requirements. Landing locations would be selected outside specified buffer areas for streams, riparian areas, raptor nests, residential areas, and other sensitive sites. Landings would be located to avoid creating excessive excavation and sidecast or slope stability problems.

Previously disturbed areas and existing openings would be used where practicable to establish landing sites.

Some key landing sites may be retained and dedicated for future timber harvest operations.

Machine slash piling, other than on landings, would be avoided if there are other feasible options available such as whole tree or leave-tops-attached yarding, lop and scatter, or prescribed fire. Where machine piling is necessary, it would be accomplished with a crawler tractor or skidder equipped with a brush rake type blade to minimize soil displacement and provide soil-free piles.

Perennial stream crossings would be avoided during operations involving heavy equipment for logging, road construction or related activities.

Designated trails would be avoided during operations involving heavy equipment for logging, road construction or related activities to the maximum extent feasible. If avoidance is not possible, provisions for designating crossings, rerouting or temporary closure of designated trails will be made to ensure safety and reduce conflicts. Trails damaged during operations would be restored following operations.

Provide variable width no-cut or modified prescription management zones for perennial streams, springs, seeps, wet meadows, and other areas which could substantially affect water quality in perennial waters.

Where forest productivity is emphasized, landings, temporary roads and primary skid trails would be scarified following use. Scarification would be to a depth of at least 12 inches. Mounds and berms would be smoothed to the original contour.

# **Appendix G Livestock Grazing Management Summary**

Allot #	Allotment Name	Acres	AUMs	1	2	3	4	5	6	7	Management Category							Grazing System	Vacant (Y or N)
											C1	C2	C3	C4	C5	C6	C7		
0072	Miltenberger (Alfalfa)	1,670	82	G	G	G	G	-	G	G	M	I	M	I	C	I	M	E	N
5001	Whitaker	114	7	G	G	G	-	-	G	-/R	M	I	M	M	C	C	C	SD	N
5002	Sanowski	71	10	G	G	G	-	-	G	-/R	M	I	M	M	C	I	C	SD	N
5003	Broadus-Carder	15	2	G	G	G	-	-	G	-/R	M	M	C	I	M	C	C	SD	Y
5004	Lamb	44	6	G	G	G	G	-	G	G	M	M	C	M	C	C	M	SD	N
5006	Emmrich	211	20	G	G	G	-	-	G	-	M	M	M	I	M	C	C	SD	Y
5007	Harsch	1,310	19	G	G	G	-	-	G	-	M	I	M	M	I	M	C	SD	N
5011	Alkali	467	12	G	G	G	G	G	G	G	M	M	C	C	M	C	I	SS	N
5012	Lynch	2,911	83	G	G	G	-	-	G	-/R	M	I	M	I	C	M	C	DR	N
5018	Wierleske	757	49	G	G	G	89%	-	G	G	M	I	M	I	M	M	M	SF	N
5019	Dunham North	3,136	191	G	G	G	G	G	G	G	M	I	I	M	M	M	I	DR	N
5022	Airport	760	62	G	G	G	-	-	G	R	M	I	M	I	C	I	M	E	N
5023	Riverside South	80	5	G	G	G	G	G	G	G	M	I	C	C	I	M	I	SS	N
5024	Keystone	353	10	G	G	G	G	G	G	G	M	I	C	C	M	M	I	SD	N
5026	Couch	734	30	G	G	G	-	-	G	G	M	I	C	M	I	C	M	SD	Y
5031	Mayfield-Harris	1,010	68	G	G	G	-	-	-	G	I	M	M	M	M	I	M	DR	N
5032	Barrett	200	24	G	G	G	G	-	G	G	M	M	C	M	M	C	M	SD	N
5050	Gray Butte	807	28	G	G	G	G	-	G	-/R	M	I	I	C	M	M	C	SS	N
5051	Sherwood Canyon	1,125	51	G	G	G	G	-	G	G	M	I	I	M	I	C	M	SD	N
5052	Smith Rock	164	9	G	G	G	G	-	G	-/R	M	I	I	C	I	C	C	SD	N
5061	McWeizz	5,027	348	G	G	G	-	-	G	-/R	M	I	I	I	M	C	C	SD	Y
5064	Williams (Desch. Co.)	841	44	G	G	G	G	G	G	G	M	M	C	M	M	M	C	DR	N
5065	Lower Bridge	6,010	310	G	G	G	G	-	G	G	M	I	M	I	I	M	M	DR	N
5066	Pine Ridge	392	34	G	G	G	G	-	G	G	M	I	C	M	M	C	C	SD	N
5067	Fisher	254	14	G	G	G	-	-	G	-/R	M	I	M	C	I	C	C	SD	Y
5068	Stevens Freemont	675	46	G	G	G	-	-	G	-/R	M	M	M	C	M	C	C	SD	Y
5069	Squaw Creek	120	17	G	G	G	-	-	G	-/R	M	I	M	M	I	C	C	SD	Y
5070	Lafollette Butte	3,664	190	G	G	G	-	-	G	-/R	M	I	M	M	I	C	C	DR	Y
5071	Odin Falls	3,795	252	G	G	G	-	-	G	-/R	M	I	M	I	I	M	C	SD	Y
5072	Struss	1,726	143	G	G	G	-	-	G	-/R	M	M	I	M	M	C	C	DR	Y
5073	Cline Butte	10,671	700	G	G	G	G	-	G	-/R	M	M	I	M	M	I	M	R	N
5075	Desert Springs	2,227	112	G	G	G	G	-	G	-	M	M	I	M	M	M	M	WS	N
5076	Buckhorn Canyon	664	68	G	G	G	G	-	G	G	M	I	C	C	M	I	M	DR	N
5078	Home Ranch	3,773	193	G	G	G	96%	-	G	-	I	I	I	I	M	I	C	E	N

Allot #	Allotment Name	Acres	AUMs	1	Alternative							Management Category							Grazing System	Vacant (Y or N)
					2	3	4	5	6	7	C1	C2	C3	C4	C5	C6	C7	Tot		
5079	Whiskey Still	1,415	100	G	31%	31%	-	-	31%	- /R31%	I	I	I	I	M	I	M	I	E	N
5080	Maston	3,624	209	G	G	G	-	-	G	G	M	I	M	I	M	M	M	M	DR	N
5081	Paulus	164	14	G	G	G	G	-	G	G	M	I	C	C	M	C	M	C	SD	N
5082	Bull Flat	199	7	G	G	G	-	-	G	G	M	M	C	C	M	C	M	C	SD	Y
5084	Blackrock	187	24	G	G	G	-	-	G	-/R	M	M	M	M	C	C	C	C	DR	Y
5086	Lone Pine Canyon	119	5	G	G	G	G	G	G	G	M	I	C	C	C	C	M	C	SD	N
5088	Montgomery	157	17	G	G	G	G	-	G	G	M	I	C	M	M	C	M	C	SD	N
5089	Knoche	160	6	G	G	G	-	-	G	G	M	I	M	M	C	M	M	M	SD	N
5092	Red Cloud	578	33	G	G	G	G	-	G	G	M	I	I	M	M	M	M	M	DR	N
5093	Cronin	346	19	G	G	G	-	-	G	G	M	I	C	M	M	I	M	M	SS	N
5094	Brown (Powell Butte)	191	15	G	G	G	G	-	G	G	M	I	C	C	M	C	M	C	SD	N
5096	Foster	319	24	G	G	G	G	G	G	G	M	I	C	C	M	C	M	C	SD	N
5107	Cain Fields	37	36	G	G	G	-	-	G	G	M	M	C	M	C	C	I	C	SD	N
5108	Zell Pond	1,215	75	G	G	G	93%	74%	-	G	M	I	I	I	M	C	M	M	SD	N
5109	Hohnstein-Tatti	4,744	262	G	G	G	G	G	-	G	M	I	M	M	C	M	M	M	SD	N
5110	Bruckert	119	35	G	G	G	-	G	-	G	M	I	C	C	C	C	I	C	SD	N
5111	Cook	1,929	49	G	G	G	-	-	G	-/R	I	I	M	I	C	C	C	M	SD	N
5112	Driveway	3,258	240	G	G	G	G	-	G	G	M	I	M	M	C	M	M	M	R;W	N
5113	Hacker-Hassing	4,220	99	G	G	G	99%	-	G	G	M	I	I	I	C	M	M	M	DR	N
5114	Weigand	3,084	177	G	G	G	G	-	G	G	M	I	I	M	C	M	M	M	DR	N
5115	Allen	3,565	110	G	G	G	G	-	G	G	M	I	I	M	C	I	I	I	DR	N
5116	Crenshaw	12,528	635	G	G	G	G	G	G	R	M	M	I	M	C	M	M	M	DR	N
5117	Pipeline	8,280	513	G	G	G	G	-	G	G	M	I	I	M	C	M	I	M	DR	N
5119	McDonald	40	50	G	G	G	G	-	G	G	M	M	C	C	C	C	I	C	SD	N
5120	Hutton	4,062	231	G	G	G	G	-	G	G	M	I	I	M	C	M	I	M	W	N
5121	Oertle	2,318	120	G	G	G	G	-	G	G	M	I	M	M	C	M	I	M	DR	N
5122	Howard	669	68	G	G	G	G	-	G	R	M	I	M	M	C	M	M	M	DR	N
5123	West Salt Creek	517	51	G	G	G	G	G	G	G	M	I	C	C	M	M	I	M	DR	N
5125	Mayfield Pond	5,615	305	G	G	G	G	-	G	G	I	I	I	M	C	M	I	I	DR	N
5127	Powell Butte	14,630	680	G	G	G	G	-	G	G	M	I	I	M	M	M	M	M	DR	N
5130	Pilot Butte	323	104	G	G	G	G	G	G	G	M	I	C	C	M	M	I	M	SD	N
5132	North Stearns	8,535	403	G	G	G	G	81%	-	G	M	I	I	I	M	M	M	I	DR	N
5133	Long Hollow	364	17	G	G	G	G	G	G	G	M	I	C	C	M	C	I	C	SD	N
5134	South Stearns	10,021	583	G	G	G	G	G	G	G	M	I	I	M	M	M	I	I	DR	N
5135	Dry Creek	6,134	334	G	G	G	99%	51%	G	R	M	I	I	I	M	M	M	I	DR	N

Allot #	Allotment Name	Acres	AUMs	1	2	Alternative					Management Category							Grazing System	Vacant (Y or N)		
						3	4	5	6	7	C1	C2	C3	C4	C5	C6	C7			Tot	
5136	Davis	4,661	352	G	G	G	G	99%	-	G	R	M	M	I	I	I	M	M	I	WS	N
5138	Plateau	5,255	252	G	G	G	G	G	G	-	G	M	I	M	M	M	M	M	M	DR	N
5140	Salt Creek	12,534	1,364	G	G	G	G	G	G	G	G	M	I	M	M	I	M	I	I	DR;W	N
5141	Sanford Creek	4,850	375	G	G	G	G	G	G	G	G	M	I	C	C	I	M	I	M	DR	N
5142	Carey	1,740	46	G	G	G	G	G	35%	G	R	M	I	M	I	I	M	M	I	DR	N
5143	Deer Creek	2,728	171	G	G	G	G	G	G	G	G	M	I	M	C	I	M	I	M	WS	N
5145	Eagle Rock	2,291	162	G	G	G	G	G	93%	G	G	M	I	I	C	I	M	I	I	DR;W	N
5176	McCabe	230	10	G	G	G	G	-	-	G	G	C	C	C	C	M	C	M	C	E	Y
5177	Reynolds	1,751	101	G	G	G	G	G	G	G	G	M	I	C	C	M	C	M	C	SD	N
5178	Grizzly Mountain	521	69	G	G	G	G	-	-	G	G	C	M	C	C	I	C	M	C	SD	Y
5179	Lytle Creek	119	8	G	G	G	G	-	-	G	G	M	I	C	C	M	C	M	C	SD	N
5180	Golden Horseshoe	198	14	G	G	G	G	-	-	G	G	M	I	C	C	M	C	M	C	SD	N
5182	F. Jones	777	77	G	G	G	G	-	-	G	G	M	I	C	C	M	C	M	C	SD	Y
5198	Laire-gove	490	15	G	G	G	G	-	-	G	G	M	C	C	C	C	C	M	C	SD	Y
5201	Alfalfa Market Road	2,468	141	G	G	G	G	G	-	G	R	M	M	I	M	C	M	M	M	SS	N
5204	Sinclair	574	28	G	G	G	G	G	G	G	-/R	M	I	M	M	M	C	C	C	SD	N
5205	Dodds Road	2,256	75	G	G	G	G	-	86%	-	-/R	M	M	M	M	M	M	M	M	DR	N
5206	Arnold Canal	603	18	G	G	G	G	-	G	-	-/R	M	I	M	M	C	C	C	C	DR	Y
5207	Michaels	1,315	38	G	G	G	G	G	G	-	-	M	I	M	M	M	M	M	M	DR	N
5208	Barlow Cave	11,118	600	G	G	G	G	G	G	G	G	M	I	M	M	I	M	M	M	DR	N
5209	Lava Beds	16,249	508	G	G	G	G	G	G	-	-	I	I	M	M	M	I	M	I	SS	N
5210	Horse Ridge	22,226	1,624	G	G	G	G	G	G	G	G	M	I	M	M	I	M	I	I	DR	N
5211	Pine Mountain	5,401	320	G	G	G	G	G	G	G	G	M	I	I	M	I	M	M	I	DR	N
5212	Millican	29,472	2,887	G	G	G	G	G	G	G	G	M	I	I	M	I	M	I	I	DR	N
5213	Rambo	15,765	670	G	G	G	G	G	G	G	R	M	I	I	M	I	M	M	I	DR	N
5214	Williamson Creek	12,946	754	G	G	G	G	G	G	G	G	M	I	I	M	I	M	I	I	DR	N
5216	Grieve	80	4	G	G	G	G	G	-	G	G	M	M	M	M	C	C	M	C	SD	N
5224	Coffelt North	483	15	G	G	G	G	G	G	G	G	M	M	C	C	M	M	I	C	SS	N
5228	Dunham South	2,804	163	G	G	G	G	G	G	G	G	M	I	C	C	I	M	I	M	DR	N
5231	West Butte	17,136	1,781	G	G	G	G	G	G	G	G	M	I	M	M	I	M	I	I	DR	N
5233	Scott	4,825	536	G	G	G	G	G	G	G	G	M	I	C	C	I	M	I	M	DR;W	N
5234	Haughton	2,491	193	G	G	G	G	G	G	G	G	M	I	C	C	M	M	I	M	DR;W	N
5252	Meisner	64	34	G	G	G	-	-	-	G	G	M	M	M	C	M	C	M	C	SD	Y
5257	South Alkali	84	5	G	G	G	G	G	G	G	G	M	M	C	C	M	C	I	C	SS	N
5261	Hudson	656	44	G	G	G	G	G	G	G	G	M	I	C	C	M	M	I	M	SD	N

Allot #	Allotment Name	Acres	AUMs	Alternative							Management Category							Grazing System	Vacant (Y or N)	
				1	2	3	4	5	6	7	C1	C2	C3	C4	C5	C6	C7			Tot
7502	A&L Sheep	6,027	1,012	G	G	G	G	-	G	G	M	M	C	M	M	M	M	C	E;D;DR;RR	Y
7504	Brown (La Pine)	552	93	G	G	G	G	-	G	G	M	M	C	M	C	M	I	C	E;D;DR;RR	N
7509	Cliff	1,885	88	G	G	G	95%	61%	G	R	M	M	M	I	M	M	M	M	E;D;DR;RR	N
7514	Cooper	313	27	G	G	G	G	-	G	-/R	M	M	C	M	M	C	C	C	A	N
7515	Helliwell	361	60	G	G	G	G	G	G	G	M	M	M	C	M	C	M	C	A	N
7530	Griffith	28	32	G	G	G	G	G	G	G	M	M	C	C	C	C	M	C	A	N
7538	Hogan	172	26	G	G	G	-	-	G	-/R	M	I	M	M	I	C	C	M	A	Y
7552	Miltenberger (La Pine)	4,612	656	G	G	G	G	84%	G	G	M	M	C	M	C	M	M	C	E;D;DR;RR	N
7554	Morgart	79	11	G	G	G	G	G	G	G	M	I	C	C	M	I	M	M	A	N
7559	Poole	1,373	180	G	G	G	G	G	G	G	M	M	M	M	M	M	M	M	E;D;DR;RR	N
7571	Smith, E.V.	153	26	G	G	G	G	-	G	G	M	M	C	M	C	C	M	C	A	Y
7572	Smith, W.C.	41	7	G	G	G	G	-	G	G	M	M	C	M	C	C	M	C	A	N
7574	Kellems	196	34	G	G	G	G	-	G	G	M	M	C	M	C	M	C	M	E;D;DR;RR	Y
7575	Stearns	425	73	G	G	G	G	58%	35%	G	M	M	C	I	M	M	M	M	E;D;DR;RR	N
7582	Williams (Jeff. Co.)	99	7	G	G	G	G	G	G	G	M	I	C	M	M	C	M	C	A	N
7586	Yager	344	33	G	G	G	-	-	G	R	M	M	M	I	C	M	M	M	E;D;DR;RR	N
7594	LeBeau	26	6	G	G	G	G	-	G	G	M	M	C	C	M	C	M	C	A	N
7595	Finley	1,304	72	G	G	G	G	-	G	G	M	M	C	M	M	M	M	C	E;D;DR;RR	N
7597	Long Prairie	719	240	G	G	G	G	G	G	G	M	M	M	C	M	M	M	C	E;D;DR;RR	N
9999	Unallotted (La Pine)	23,509	6,800	G	G	G	94%	-	G	G	M	M	M	I	C	C	M	C	A	Y

**AUMs**  
These figures represent livestock active preference forage allocation, expressed in animal unit months (AUMs)

**Alternatives**  
G Open for livestock grazing (entire allotment) under direction in this alternative

- Livestock grazing discontinued

-/R Reserve forage allotment (RFA)

XX% Livestock grazing discontinued or RFA

Percent of acres remaining open (or RFA) for livestock grazing (discontinued in remainder of allotment)

#### Management Category

The scores C, M, and I generally mean Custodial, Maintain, and Improve. See further descriptions, below, and in Affected Environment, Livestock Grazing.

#### Criteria 1-7 definitions

C1 Standards for rangeland health. C = meeting all standards, M = unknown, or not meeting one or more standards but livestock are not a factor, and I = not meeting one or more standards and livestock are known or expected to be a factor

C2 Forage production present and potential. C = potential is low, and present is near potential, M = potential is moderate to high, present is near potential, and I = potential is moderate to high and present is low to moderate

C3 Potential conflicts with recreation, other uses. C = low, M = moderate, I = high

C4 Potential conflicts with adjacent land use or busy roads. C = low, M = mod, I = high

C5 Threatened, endangered, or sensitive species, high priority watersheds, or other important resources. C = no or not known at this time, M = some present or expected, and I = numerous present

C6 Present management. C = satisfactory or is only logical practice, M = satisfactory, I = Unsatisfactory.

C7 Prudent investor's willingness to invest. C = no, M = maybe, I = yes

#### Grazing System

These are the systems proposed to be implemented under Brothers / La Pine RMP direction, and subsequent direction contained in District Rangeland Program Summaries. This direction has been implemented as funding and priorities allow, during allotment evaluation, permit renewal, or rangeland health assessment.

A	Any system which maintains existing trends in ecological condition	SD	Short duration
DR	Deferred rotation	SF	Summer / fall
E	Early	SS	Spring / summer
EX	Exclusion	W	Winter
R	Rotation	WS	Winter / spring
Vacant	This refers to whether or not a grazing operator currently holds the permit. If not, the allotment is considered vacant and there is a "Y" in this column		



# Appendix H

# Visual Resource Inventory

# Process

# Upper Deschutes RMP

## Introduction

The visual resource analysis consists of a scenic quality evaluation, sensitivity level analysis, and a consideration of distance zones. Based on these factors, BLM administered lands are placed into one of four visual resource classes. These inventory classes represent the relative value of visual resources, with Class I and II being the most valued, Class III representing a moderate value, and Class IV being of least value. In addition, areas can be identified through the RMP process as Class V – areas where the natural character of the landscape have been disturbed to a point where rehabilitation is needed to bring it up to one of the four other classifications. This classification also applies to areas where there is potential to increase an area’s visual quality; Class V is often used as an interim classification until objectives of another VRM Class can be reached.

The establishment of VRM classes on public land is based on an evaluation of the landscape’s scenic qualities, public sensitivity toward certain areas, and the location of affected land from major travel corridors (distance zoning).  
Desired Future Condition

Landscapes seen from high use travel routes, recreation destinations, and special management areas will be managed to maintain or enhance their appearance. Landforms that provide a visual backdrop to communities will also be managed to maintain or enhance their appearance. To the casual observer, results of management activities in these areas either will not be evident or will be visually subordinate to the existing landscape.

Landscapes will be enhanced by opening views to distant peaks, unique landforms, or other features of interest. Variety will be introduced to uniform landscapes by creating openings and edges between juniper woodland and sagebrush grassland. Landscapes containing negative visual elements, including braided or extremely dense road networks, garbage piles, unstable cut or fill slopes, open pits, or a preponderance of damaged trees or stumps, etc. will be rehabilitated.

Management activities on highly visible landforms that form a community backdrop will not be evident. In these areas, vegetation management will only be approved if it protects and improves visual quality.

## Rationale

Section 102(8) of FLPMA declares that public land will be managed to protect the quality of scenic values and, where appropriate, to preserve and protect certain public land in its natural condition. NEPA, Section 101(b), requires Federal agencies to “assure for all

Americans...esthetically pleasing surroundings.” Section 102 of NEPA requires agencies to “utilize a systematic, interdisciplinary approach which would ensure the integrated use of...environmental design in the planning and decision making process.” Guidelines for the identification of VRM Classes on public lands are contained in BLM Manual Handbook 8410-1, Visual Resource Inventory.

## **Characteristics of the Planning Area**

The planning area is located within the Columbia Plateau Physiographic Province (Illustration 5 – Physiographic Province Map, Manual 8410 – Visual Resource Inventory). This physiographic province is characterized by incised rivers, extensive plateaus, and anticlinal ridges. The planning area itself consists of gently sloping to flat lands covered in Sagebrush - grassland and Juniper. This general visual character is punctuated by the Deschutes River Canyon and the Crooked River Canyon; and by numerous buttes (e.g., Cline Buttes, West Butte, Grey Butte, and others). Other visual features of the planning area include smaller canyons such as Squaw Creek, several dry canyons, and several large water bodies, including Prineville Reservoir and Ochoco Reservoir. The BLM lands are generally seen against a longer distance backdrop of high peaks and forest lands to the west (Cascade Range – Deschutes National Forest), to the north and east (Gray Butte – Crooked River National Grasslands, Ochoco Mountains – Ochoco National Forest), and to the south (Pine Mountain – Deschutes National Forest). Other key visual elements of the planning area include the rock cliffs and upland spires along the Crooked River at Smith Rock State Park and adjacent BLM lands. Pronounced cliffs and river views are also apparent along the Chimney Rock Segment of the Crooked River south of Prineville.

Portions of the major river canyons in the planning area are designated as Federal Wild and Scenic Rivers. The Lower Crooked (Chimney Rock Segment) Wild and Scenic River is classified as a Recreational River. This stretch of river is located below Prineville Reservoir in Crook County. The Middle Deschutes Wild and Scenic River between Lake Billy Chinook and Odin Falls is classified as a Scenic River. The Crooked River between Lake Billy Chinook and Ogden Wayside is classified as a Recreational River. These two stretches of river are located adjacent to Crooked River Ranch in Deschutes and Jefferson Counties. While the Upper Deschutes Wild and Scenic River does not flow through BLM lands in La Pine, a small portion of BLM lands between Forest Road 4360 and La Pine State Park are located within the Wild and Scenic River corridor.

The visual resource management guidelines for the Chimney Rock segment of the Crooked River are defined as a Retention Visual Quality Objective (VQO) or Partial Retention VQO. These correspond roughly to BLM’s Visual Resource Management Class II and Class III. The Middle Deschutes and Crooked Wild and Scenic River stretches adjacent to Crooked River Ranch are designated as VRM Class I within the canyon, and Class II for the surrounding upland above the rim. The VRM Classes for a portion of the Middle Deschutes Wild and Scenic River were superseded by BLM Instruction Memorandum 2000-096, which applied a VRM Class I to the Steelhead Falls WSA. The Upper Deschutes Wild and Scenic River/State Scenic Waterway Plan (1996) applied a Partial Retention VQO to the 79 acres of BLM lands within the Upper Deschutes W&S River – this corresponds roughly to BLM’s VRM Class III designation.

Other features that play a role in the area’s visual quality and diversity include large tracts of rural ranch and farmland that generally preserve open views and provide a pastoral setting. The area still retains a large number of older buildings and vestiges of earlier ranching, agricultural, and land settlement activities that are valued for their historic and visual interest. Many irrigation canals are located on BLM lands, and these also provide some visual interest, particularly during the summer, when they are at full flow. Isolated geologic features such as lava tubes, lava blisters, and individual large juniper trees, etc. also have high visual interest.

When compared to the visual character of the cascade peaks and slopes or the Deschutes and Crooked River canyons, the majority of BLM lands have much less pronounced visual quality – these are not lands that are going to appear on many travel postcards. However, given the rapid development of central Oregon, these lands are highly valued for their visual quality in that they are not developed and provide a natural backdrop for local communities and a buffer between rapidly developing areas.

The presence of large stands of juniper is seen by some people to be a visual benefit, particularly for residents whose homes are screened and somewhat isolated by existing juniper stands. Others view junipers as a weed species with relatively little benefit. The planning area contains many large stands of old growth juniper, which when viewed individually, have great visual interest, character and diversity; however, at a regional scale, these old growth stands are not highly distinguishable.

## Visual Resource Management (VRM) Mapping Process

### Existing Visual Quality

Based on the characteristics of the physiographic province and the local area, the elements in the following table (Table H-1) were used to develop a scenic quality overlay (map) for the planning area:

### Sensitivity Level Analysis

Each viewer of BLM managed public lands in the planning area has different perceptions formed by individual influences. To some, the BLM lands are a desert wasteland, to others a place to recreate, to others a source of income, and to still others, a defense against unchecked growth and urbanization. The high growth rates and development in the area has led to many public concerns over visual quality and the role of the landscape in providing community identity and in maintaining a quality of life standard in central Oregon. Many land use issues have recently become publicized as visual resource and quality of life issues, including: the placement of cell phone towers; the recent construction of a highly visible golf driving range north of Bend; and the proposed piping of water formerly transported in surface canals. The common element of these issues is the public concern for visual quality and a desire to retain the special, intrinsic and appreciated qualities of the natural backdrop surrounding local communities.

Given the urban nature of the planning area, and the fragmented public land pattern of the BLM parcels, these BLM lands are highly visible on a daily basis to a large number of residents and visitors. While these viewers may not have expectations for pristine views as seen in a national park or other highly managed area; these views are common, continuous, and experienced by large numbers of viewers who have a high degree of ownership and concern about the visual character of landforms that come to define their community (e.g., Cline Buttes, Powell Buttes, etc.). As the area continues to grow and develop, the use volume, or number of viewers will increase (thus increasing the visual sensitivity), and the relative scarcity of undeveloped, natural landscapes will increase (again increasing the visual sensitivity).

Most of the higher elevation or moderate to high slopes category BLM managed land in the planning area are regularly seen by a multitude of public viewpoints, including State Highways, County Roads, State or local parks, and community areas. These lands are often highly recognized landscape features that give identity to local communities such as Powell Butte and Cline Buttes. While these areas may not be of extreme visual quality when viewed in the context of the physiographic region, their prominence as a community backdrop in a rapidly growing and developing area makes them of high sensitivity – i.e., the public generally has a high degree of concern for scenic quality in these highly visible and prominent areas.

**Table H-1. Characteristics of the physiographic province and the local area.**

	<b>Landform</b>	<b>Water</b>	<b>Cultural Modifications</b>	<b>Adjacent Scenery</b>
Class A – combines the most outstanding characteristics of each rating factor.	High vertical relief such as prominent cliffs, spires, or large rock outcrops or a concentration of surface variation such as ridges, canyons, or lava tubes	Clear and clean appearing still, or cascading white water, any of which are a dominant factor in the landscape	Landscape free from esthetically undesirable or discordant sights and influences or modifications add favorably to visual character	Adjacent scenery greatly enhances visual quality
Class B – Area in which there is a combination of some outstanding features and some that are fairly common to the physiographic region.	Mesas, buttes, or interesting size or shaped landforms, though not dominant or exceptional	Flowing or still water, but not dominant in the landscape	Cultural modifications distinctive, though somewhat similar to others in the region	Adjacent scenery moderately enhances visual quality
Class C – Area in which the features are fairly common to the physiographic region.	Low hills or gently sloping to flat lands with few interesting or detailed landscape features.	Water is absent or not noticeable	Modifications are so extensive that scenic qualities are mostly nullified or substantially reduced.	Adjacent scenery has little or no influence on overall visual quality

In other cases, areas of BLM managed land have specific values and identity for a variety of recreationists. These areas include the Steelhead Falls area along the Deschutes River, the Horse Ridge area, Dry River Canyon, the Deep Canyon area, and the Badlands WSA. In these areas, visitors generally are seeking a natural setting and some degree of solitude and generally have a relatively high degree of concern for visual quality.

The factors referenced in BLM Manual 8410-1 relating to Sensitivity Levels include type of user (e.g., recreational vs. commuter), amount of use, public interest (local, statewide, national), adjacent land uses, and special areas.

In general the following criteria were used to establish Sensitivity Levels for the Upper Deschutes Planning Area:

#### **High Sensitivity**

1. Landforms that form community backdrops or are prominent at a regional scale
2. Areas with congressional or state designations, or areas that could be perceived by the public as having the same type of designations and protections...i.e., Wild and Scenic River corridors and the remaining public land river parcels that are outside these designated corridors. WSAs also fall into this category.
3. Areas that serve as recreation destinations for a variety of user groups and are used by out of area visitors on a regular basis. These would include river corridors, BLM lands adjacent to State Park units, dry canyons with defined and well used trail systems, etc.

#### **Moderate Sensitivity**

The Sensitivity Level is Moderate for most of the remainder of the planning area. These areas would be those that receive moderate to low levels of recreational use, or high

levels of use that are primarily higher speed, motorized trail use, or are used nearly exclusively by local residents.

### **Low Sensitivity**

This includes lands that receive little if any recreation use, and are mostly used only by adjacent residents. Areas of low sensitivity also include BLM lands that are isolated small parcels that have no legal public access, or are not recognizable by the majority of the public as being public land. Areas of BLM managed land that are so fragmented by inholdings or convoluted ownership boundaries that the public land is not recognizable may also be designated as Low sensitivity.

## **Known Observation Points**

Due to the relatively high development density throughout the planning area, when compared to the other resource areas in the BLM Prineville District, nearly all BLM lands are visible from residences, use areas or public roads. Known observation points (KOPs) are identified in the RMP process to establish distance zones, which in turn lead to differentiating areas of different visual sensitivity (i.e., areas that are seen in the distance can typically absorb greater degrees of alteration and visual contrast). Since the planning area is so heavily developed, these key observation points may overlap to the extent that little, if any differentiation is made based on distance zones.

Key Observation Points were mapped and viewsheds generated using Arcinfo for most of these points (redundant points located close together were not all used). The list of KOPs is as follows:

### **Roads**

1. State Highway 20
2. State Highway 97
3. State Highway 126
4. State Highway 27 (includes National Back Country Byway)
5. State Highway 31 (Outback State Scenic Byway)
6. State Highway 26
7. Paulina Lake Highway (Forest Road 21)
8. South Century Drive
9. Finley Butte Road (Forest Road 22)
10. The Millican Road was added during the RMP alternative development process when the decision to pave the road was made through legislative action.

### **Parks**

1. Smith Rocks State Park
2. Prineville Reservoir State Park
3. Cline Falls State Park
4. Tumalo State Park
5. Pilot Butte State Park
6. Ochoco Wayside/Ochoco Lake State Park
7. Peter Skene Ogden Wayside State Park
8. La Pine State Park
9. Rosland Campground

Note: The scattered State Parks parcels along State Highway 97 between Bend and Redmond (approximately 600 acres in about 8 parcels) were not identified as Key Observation Points. Based on discussions with State Parks officials, these parcels have no current development plans, and are not signed or identified as State Park parcels to the public. In general, these parcels receive custodial management and serve only as open space buffers along the highway corridor to maintain a more natural or rural appearance between Bend and Redmond.

#### **Water Bodies**

1. Deschutes River
2. Crooked River
3. Squaw Creek
4. Mayfield Pond
5. Reynolds Pond
6. Ochoco Reservoir
7. Prineville Reservoir
8. Little Deschutes River

#### **Special Management Areas**

1. Tumalo Canal ACEC
2. Huntington Wagon Road ACEC

### **Distance Zones**

Based on BLM Manual Handbook 8410-1, Visual Resource Inventory, distance zones are defined as follows:

**Foreground/Middleground** = 0 to 5 miles

**Background** = 6 to 15 miles

**Seldom Seen** = area beyond 15 miles or areas within F/M that cannot be seen

Distance zones and seen areas were generated from Key Observation Points. However, given the multitude of key observation points, there were few areas that fall outside the foreground view of at least some KOPs.

### **Visual Resource Management (VRM) Classes**

**Class 1** – Natural ecological changes and very limited management activity are allowed. Any contrast created within the characteristic landscape must not attract attention. This classification is applied to wilderness areas, wild and scenic rivers (primarily those classified as scenic), and other similar situations. In the UDRMP area, two areas receive VRM Class 1 designations:

Steelhead Falls WSA  
Badlands WSA

**Class 2** – Changes in any of the basic elements (form, line, color, texture) caused by a management activity should not be evident in the characteristic landscape. Contrasts are seen, but must not attract attention.

**Class 3** – Contrasts to the basic elements caused by a management activity are evident, but should remain subordinate to the existing landscape.

**Class 4** – Any contrast attracts attention and is a dominant feature of the landscape in terms of scale, but it should repeat the form, line, color, and texture of the characteristic landscape.

**Class 5** – The classification is applied to areas where the natural character of the landscape has been disturbed to a point where rehabilitation is needed to bring it up to one of the four other classifications. The classification also applies to areas where there is potential to increase the landscape's visual quality. It would, for example, be applied to areas where unacceptable cultural modification has lowered scenic quality; it is often used as an interim classification until objectives of another class can be reached.

# Appendix I Minerals

## Historic Mineral Activity and Mineral Potential

### Historic Mineral Activity in the Upper Deschutes Planning Area

#### Locatable Minerals

Locatable minerals are those minerals for which mining claims can be located, such as precious and base metals, and some nonmetallic minerals that possess unique properties (uncommon variety minerals). Exploration for locatable minerals in the Upper Deschutes planning area has been sporadic. Presently, there are 26 mining claims and 7 millsite claims within the planning area and two notices have been filed under the BLM Surface Management Regulations (43 CFR 3809).

**Bear Creek Butte:** Minor amounts of mercury have been produced from the Clarno Formation in the southeastern part of the planning area. Prospecting began in the late 1920s and by the late 1950s, the US Bureau of Mines had recorded a total of 30 flasks of mercury from the Platner and Oronogo mines, though the actual output was probably larger (Brooks, 1963).

**Terrebonne:** Diatomite was mined on private land a few miles west of Terrebonne in the 1950s and continued until the reserves were depleted (Orr and others, 1992). There are 20 diatomite claims on adjoining public lands but no notice or plan level operations are occurring.

#### Leasable Minerals

Leasable minerals are those minerals for which a person must obtain a lease from the Federal government in order to produce the mineral. Generally, leasable minerals include deposits that occur over large areas, such as the energy minerals—oil and gas, coal, and geothermal resources. Lake bed evaporite minerals such as sodium and potassium are also leasable. Owing to the prevalence of volcanic and volcanoclastic sedimentary rocks in the planning area, coal, coal bed methane, oil shale and tar sands and considered to be absent from the planning area and will not be addressed. Currently, no areas within the planning area are leased and no exploration is occurring. This situation could change as technology improves or if energy prices rise dramatically.

**Oil and Gas:** Minimal oil and gas exploration has occurred historically in the planning area.

**Geothermal:** There is a geothermal anomaly within the planning area in the vicinity of Powell Buttes that was investigated by Brown and others, (1980). Their work indicates a potential for boiling-temperature fluids at a depth of about 1000 meters. More geophysical exploration and deep drilling are required to prove the existence of an economically viable geothermal system.

## **Salable Minerals**

Salable minerals are common variety minerals such as sand, gravel, rock, and cinders that generally are purchased from the Federal government. Over the past 10 years, nearly 1,000,000 cubic yards of sand, gravel, and rock have been produced from quarries and pits for construction and maintenance of county roads and state highways. Sales of sand and gravel to individuals have averaged about 2,500 cubic yards per year. During the same period of time, cinder production has varied from about 200 to 1,000 cubic yards per year (mostly for use on county roads). Theft of slab lava (a decorative stone) has been a problem in the Cline Buttes area for many years. Over the past 5–8 years, the demand for decorative stone has gone from a few to several hundred tons per a year.

## **Mineral Potential**

### **Classification**

The mineral potential classification system, as described in BLM Manual 3031, Illustration 3, is used to evaluate the potential for locatable, leasable, and salable minerals in the resource area. Potential refers to the potential for occurrence of specific mineral resources rather than their economic viability.

### **Level of Potential**

O. ~ The geologic environment, the inferred geologic processes, and the lack of mineral occurrences do not indicate potential for accumulation of mineral resources.

L. ~ The geologic environment and the inferred geologic processes indicate low potential for accumulation of mineral resources.

M. ~ The geologic environment, the inferred geologic processes, and the reported mineral occurrences or valid geochemical/geophysical anomaly indicate moderate potential for accumulation of mineral resources.

H. ~ The geologic environment, the inferred geologic processes, the reported mineral occurrences and/or valid geochemical/geophysical anomaly, and the known mines or deposits indicate high potential for accumulation of mineral resources. The “known mines and deposits” do not have to be within the area that is being classified but have to be within the same type of geologic environment.

ND. ~ Mineral(s) potential not determined due to lack of useful data. This notation does not require a level-of-certainty qualifier.

#### **Level of Certainty**

A. ~ The available data are insufficient and/or cannot be considered as direct or indirect evidence to support or refute the possible existence of mineral resources within the respective area.

B. ~ The available data provide indirect evidence to support or refute the possible existence of mineral resources.

C. ~ The available data provide direct evidence but are quantitatively minimal to support or refute the possible existence of mineral resources.

D. ~ The available data provide abundant direct and indirect evidence to support or refute the possible existence of mineral resources.

## Mineral Potential in the Planning Area

No areas of critical mineral potential exist in the planning area. The potential for energy derived from the burning of biomass generated by juniper treatments is covered in the Vegetation sections.

### Locatable Minerals

Map S-20 displays the areas of varying potential for locatable minerals. The mineral potential areas were developed from known geologic settings, inferred geologic processes, current and historical mining activity, and extrapolation of known mineral deposits or mineralization into areas of similar geologic setting.

### *Base and Precious Metals*

There is a high potential (H-C) for the occurrence mercury in the southeast part of the planning area near Bear Creek Butte based on historical production and the proven existence of cinnabar mineralization (Brooks, 1963). However, the deposits tend to be localized and small and there is no direct evidence to suggest the presence of large scale cinnabar deposits. The northeastern part of the planning area has a moderate potential (M-B) for some base and precious metals due to the occurrence of such materials elsewhere in the John Day and Clarno Formations.

### *Diatomite*

Diatomite is an accumulation of microscopic siliceous skeletons of aquatic plants (diatoms) that proliferate in shallow, silica-rich lake water. In the resource area, diatomite occurs about 5 miles east of Terrebonne in a late Miocene or early Pliocene lake bed (Orr and others, 1992). Based on the known occurrence of diatomite on private lands, a high potential (H-C) for the existence of diatomite is inferred for adjoining BLM-administered lands.

### Leasable Minerals

#### *Oil and Gas*

No oil or gas has been discovered within the planning area and exploration has been minimal. The central and western parts of the planning area have a low potential for oil and gas (L-B) because of the predominantly young volcanic geology (Map S-18, Oil and Gas Potential). The eastern part of the planning area where the John Day and Clarno formations crop out, there is a moderate potential (M-B). Oil and gas have been discovered in or below these formations northeast of the planning area near the John Day River.

#### *Geothermal Energy*

The central and western parts of the planning area are considered to have a moderate (M-B) geothermal potential owing to the young volcanic geology and the area's proximity to the Cascade Volcanoes and Newberry Caldera (Map S-19, Geothermal Potential). There is a geothermal anomaly within the planning area in the vicinity of Powell Buttes that was investigated by Brown and others, (1980). Their work indicates a potential for boiling-temperature fluids at a depth of about 1000 meters and more work is required to prove the existence of an economically viable geothermal system. Based on this information, the Powell Buttes area is considered to have a high (H-C) potential for geothermal development.

## **Salable Minerals**

Common variety mineral materials such as sand, gravel, rock, and cinders may be purchased or acquired by free use permits from the BLM. Most of the planning area has a moderate potential for the occurrence of mineral materials (Map S-21, Mineral Material Potential). The high potential areas are in and around existing mineral material sites. Most of the high potential areas occur in areas with cinder cones, alluvial deposits of sand and gravel (La Pine area) and volcanic rock outcrops known to have a sufficient quality for utilization in asphalt. The Badlands basalt flow also has a high potential for mineral materials in the form of ropy slab lava. However, the collection of slab lava in the Badlands ACEC/WSA would not be allowed in any alternative.

# **Mineral Development Scenarios**

## **Introduction**

This appendix describes the reasonable foreseeable development scenarios for development of leasable, locatable, and salable mineral commodities. The purpose of the reasonably foreseeable development scenario is to provide a model that predicts the level and type of future mineral activity in the planning area, and will serve as a basis for cumulative impact analysis. The reasonably foreseeable development first describes the steps involved in developing a mineral deposit, with presentation of hypothetical exploration and mining operations. The current activity levels are discussed in Chapter 2 of this document. Future trends and assumptions affecting mineral activity are discussed here, followed by the prediction and identification of anticipated mineral exploration and development.

## **Scope**

The development scenarios are limited in scope to BLM-administered lands within the planning area. The reasonable foreseeable development is based on the known or inferred mineral resource capabilities of the lands involved, and applies the conditions and assumptions discussed under Future Trends and Assumptions. Changes in available geologic data and/or economic conditions would alter the reasonable foreseeable development, and some deviation is to be expected over time.

## **Leasable Mineral Resources**

### **Reasonably Foreseeable Development of Oil and Gas**

#### **Future Trends and Assumptions**

Based on the history of past drilling and foreseeable development potential in the planning area, activity over the next 15–20 years would continue to be sporadic. It is anticipated that oil and gas activity would consist of the issuance of a few leases, a few geophysical surveys, and perhaps the drilling of one or two exploratory holes. This could occur almost anywhere in the district, but more likely would occur in the eastern part of the planning area.

Because of the low potential for development of hydrocarbons, (even though the potential for occurrence is moderate in some areas), the discovery of a producible oil and gas field during this planning cycle is not expected. However, to comply with

the Supplemental Program Guidance for Fluid Minerals (Manual Section 1624.2), the potential surface impacts associated with the discovery and development of a small oil/gas field are given in the following sections.

## Geophysical Exploration

Geophysical exploration is conducted to determine the subsurface structure of an area. Three geophysical survey techniques are generally used to define subsurface characteristics through measurements of the gravitational field, magnetic field, and seismic reflections.

Gravity and magnetic field surveys involve small portable measuring units which are easily transported via light off-road vehicles, such as four-wheel drive pickups and jeeps, or aircraft. Both off-road and on-road travel may be necessary in these two types of surveys. Usually a three man crew transported by one or two vehicles is required. Sometimes small holes (approximately 1 inch by 2 inches by 2 inches) are hand dug for instrument placement at the survey measurement points. These two survey methods can make measurements along defined lines, but it is more common to have a grid of discrete measurement stations.

Seismic reflection surveys are the most common of the geophysical methods, and they produce the most detailed subsurface information. Seismic surveys are conducted by sending shock waves, generated by a small explosion or through mechanically beating the ground surface with a thumping or vibrating platform, through the earth's surface. The thumper and vibrator methods pound or vibrate the ground surface to create a shock wave. Usually four large trucks are used, each equipped with pads about 4-foot square. The pads are lowered to the ground, and the vibrators are electronically triggered from the recording truck. Once information is recorded, the trucks move forward a short distance and the process is repeated. Less than 50 square feet of surface area is required to operate the equipment at each recording site.

The small explosive method requires that charges be detonated on the surface or in a drill hole. Holes for the charges are drilled utilizing truck-mounted or portable air drills to drill small-diameter (2–6 inches) holes to depths of 100–200 feet. Generally 4–12 holes are drilled per mile of line and a 5–50-pound charge of explosives is placed in the hole, covered, and detonated. The resulting shock wave is recorded by geophones placed in a linear fashion on the surface. In rugged terrain, a portable drill carried by helicopter can sometimes be used. A typical drilling seismic operation may utilize 10–15 men operating 5–7 trucks. Under normal conditions, 3–5 miles of line can be surveyed daily using this method. The vehicles used for a drilling program may include heavy truck mounted drill rigs, track-mounted air rigs, water trucks, a computer recording truck, and several light pickups for the surveyors, shot hole crew, geophone crew, permit man, and party chief.

Public and private roads and trails are used where possible. However, off-road cross-country travel is also necessary in some cases. Graders and dozers may be required to provide access to remote areas. Several trips a day are made along a seismograph line, usually resulting in a well defined 2-track trail. Drilling water, when needed, is usually obtained from private landowners.

The surface charge method utilizes 1–5-pound charges attached to wooden laths 3–8 feet above the ground. Placing the charges lower than 6 feet usually results in the destruction of vegetation, while placing the charges higher, or on the surface of deep snow, results in little visible surface disturbance.

It is anticipated that 2 notices of intent involving seismic reflection and gravity/magnetic field surveys would be filed under all alternatives.

## **Drilling Phase**

Once the application for a permit to drill is approved, the operator may begin construction activities in accordance with stipulations and conditions. When a site is chosen that necessitates the construction of an access road, the length of road may vary, but usually the shortest feasible route is selected to reduce the haul distance and construction costs. Environmental factors or a landowner's wishes may dictate a longer route in some cases. Drilling activity in the planning area is predicted to be done using existing roads and constructing short (approximately 0.25 mile) roads to access drill site locations.

Based on the history of past drilling and the low to moderate potential for oil and gas, exploration will probably continue to be sporadic. During the life of this plan, 1-2 exploratory wells for oil and gas are expected to be drilled in the eastern part of the planning area where the potential is moderate. The success rate of finding oil or gas is predicted to be no greater than 10% based on the average exploratory well success rate in the U.S.

During the first phase of drilling, the operator would move construction equipment over existing maintained roads to the point where the access road begins. No more than 0.25 mile of moderate duty access road with a cinder or gravel surface 18 to 20 feet wide is anticipated to be constructed. The total surface disturbance width would average 40 feet with ditches, cuts, and fill. The second part of the drilling phase is the construction of the drilling pad or platform. The likely duration of well development, testing, and abandonment is predicted to be less than 12 months per drill site. The total disturbance for each exploratory well and any new road constructed to the drill site is expected to be up to 6 acres. Thus, the total surface disturbance caused by exploratory drilling over the life of the plan is expected to be up to 12 acres.

## **Field Development and Production**

No field development is expected to occur during the life of the plan. However, the following scenario describes operations and impacts associated with field development and production.

Small deposits of oil or gas discovered in the planning area would probably not be economic to develop. The minimum size that would be economic would be a field containing reserves of 50–60 billion cubic feet (BCF) of gas with a productive lifespan of 10 years. The total area of such a field would be 200 acres with the array of development wells spanning 160 acres. The field would require four development wells in addition to the discovery well. Each development would require 0.25 miles of road. Development well access roads would be cinder or gravel surfaced and would have a width of about 20 feet. The width of the surface disturbance associated with roads would average 40 feet. Produced gas would be carried by pipelines over a distance of 30 to 60 miles. The width of surface disturbance for pipelines would average 30 feet. Any produced oil would be trucked to refineries outside of Oregon.

For development of a single 50-60 BCF field, the total surface disturbance would be 8 acres for well pads, 5 acres for roads, 13 acres for field development and up to 600 acres for pipelines. The total surface disturbance caused by 1-2 exploration wells and the development of one oil/gas field over the life of the plan would be up to 650 acres.

## **Plugging and Abandonment**

Wells that are completed as dry holes are plugged according to a plan designed specifically for the down hole conditions of each well. Plugging is accomplished by the placing of cement plugs at strategic locations downhole and up to the surface. Drilling

mud is used as a spacer between plugs to prevent communication between fluid bearing zones. The casing is cut off at least 3 feet below ground level and capped by welding a steel plate on the casing stub. After plugging, all equipment and debris would be removed and the site would be restored as near as reasonably possible to its original condition. It predicted that the 1-2 exploratory wells drilled would be plugged and abandoned.

## Reasonably Foreseeable Exploration and Development of Geothermal Resources

### Future Trends and Assumptions

With environmental protection and enhancement being a major consideration in the Pacific Northwest, clean, low-impacting energy sources are becoming more important. The abundant geothermal resources thought to be present in the Northwest are essentially undeveloped. As the demand for environmentally-friendly energy sources increases, the known geothermal resource in the Powell Buttes area would likely attract renewed attention.

### Geophysical/Geochemical Exploration

As with oil and gas, geothermal geophysical operations can take place on leased or unleased public land. Depending upon the status of the land (leased/unleased), the status of the applicant (lessee/nonlessee), and the type of geophysical operation proposed, (drilling/nondrilling), several types of authorizations can be used if the proposed exploration exceeds "casual use," as defined in 43 CFR 3200.1. In all cases, the authorizations require compliance with NEPA and approval by the authorized officer. As with oil and gas, the operator is required to comply with all terms and conditions of the permits, regulations, and other requirements, including reclamation, prescribed by the authorized officer. Monitoring for compliance with these requirements would be done during the execution of the operations and upon completion.

In addition to the geophysical methods discussed in the Oil and Gas section, the following exploration techniques are often employed in geothermal prospecting:

**Microseismic:** Small seismometers are buried at a shallow depth (hand-dug holes) and transmit signals from naturally-occurring, extremely minor seismic activity (micro-earthquakes) to an amplifier on the surface. Stations are located away from roads to avoid traffic "noise." These units are often backpacked into areas inaccessible to vehicles.

**Resistivity:** Induced polarization techniques are used to measure the resistance of subsurface rocks to the passage of an electric current. A vehicle-mounted transmitter sends pulses of electrical current into the ground through two widely spaced electrodes (usually about two miles apart). The behavior of these electrical pulses as they travel through underlying rocks is recorded by "pots" (potential electrodes), small ceramic devices that receive the current at different locations. The electrodes are either short (2–3 feet) rods driven into the ground, or aluminum foil shallowly buried over an area of several square feet. Two or three small trucks transport the crew of 3–5 people to transmitting and receiving sites.

**Telluric:** A string of "pots" record the variations in the natural electrical currents in the earth. No transmitter is required. Small trucks are used to transport the crew and equipment.

**Radiometric:** Radioactive emissions (generally radon gas) associated with geothermal resources are usually measured using a hand-held scintillometer, often at hot spring

locations. Another method used involves placing plastic cups containing small detector strips sensitive to alpha radiation either on the surface or in shallow hand-dug holes. If holes are dug, they are covered, and the cups left in place for 3–4 weeks. At the end of the sampling period, the cups are retrieved and all holes are backfilled. These surveys can be conducted on-foot or with the aid of light vehicles.

**Geochemical Surveys:** Geochemical surveys are usually conducted at hot springs by taking water samples directly from the spring. Sampling for mercury associated with geothermal resources is often done by taking soil samples using hand tools. These surveys can be conducted on-foot or with the aid of light vehicles.

**Temperature Gradient Drill Hole Surveys:** Temperature gradient holes are used to determine the rate of change of temperature with respect to depth. Temperature gradient holes usually vary in diameter from about 3.5 to 4.5 inches, and from a few hundred feet to about 5,000 feet in depth. They are drilled using rotary or coring methods. Approximately 0.1 to 0.25 acre per drill hole would be disturbed. A typical drill site could contain the drill rig, most likely truck-mounted, water tank(s), fuel tank, supply trailer, and a small trailer for the workers. Drilling mud and fluids would be contained in earthen pits or steel tanks. Water for drilling would be hauled in water trucks, or if suitable water sources are close, could be piped directly to the site. Water consumption could range from about 2,000 to 6,000 gallons per day, with as much as 20,000 gallons per day under extreme lost circulation conditions.

Other equipment that would be utilized includes large flatbed trucks to haul drill rod, casing, and other drilling supplies, and in some cases, special cementing and bulk cement trucks. Two or three small vehicles would be used for transporting workers. In most cases, existing roads would be used. It is estimated that short spur trails (usually less than a few hundred yards long) would be bladed for less than 10 percent of these holes. All holes would be plugged and abandoned to protect both surface and subsurface resources, including aquifers, and reclamation of disturbed areas would be required, unless some benefit to the public could be gained—for example, a water well or camping area. Depending upon the location and proposed depth of the drill hole, detailed plans of operation that cover drilling methods, casing and cementing programs, well control, and plugging and abandonment may be required.

Based the needed exploratory work identified by Brown and others (1980) to determine economic viability in the Powell Buttes area, it is anticipated that notice(s) of intent will be filed to drill up to 20 temperature gradient holes in that area.

## **Drilling and Testing**

Drilling to determine the presence of, test, develop, produce, or inject geothermal resources can be done only on land covered by a geothermal resources lease.

A typical geothermal well drilling operation would require 2–4 acres for a well pad, including reserve pit, and 0.5 mile of moderate duty access road with a surface 18–20 feet wide, totaling up to 40 feet wide with ditches, cuts, and fills. Existing roads would be used whenever possible. Total surface disturbance for each well, and any new road is expected to be no more than 6 acres. In some cases, more than one production well could be drilled from one pad. Well spacing would be determined by the authorized officer after considering topography, reservoir characteristics, optimum number of wells for proposed use, protection of correlative rights, potential for well interference, interference with multiple use of lands, and protection of the surface and subsurface environment. Close coordination with the State would take place. It is anticipated that the duration of well development, testing, and if dry, abandonment, would be 4 months. Prior to abandonment, the operator would be required to plug the hole to prevent contamination of aquifers and any impacts to subsurface and surface resources. Plugging

is accomplished by the placing of cement plugs at strategic locations downhole and up to the surface. Depending upon the formations encountered, drilling mud could be used as a spacer between plugs to prevent communication between fluid bearing zones. The casing is cut off at least 6 feet below ground level and capped by welding a steel plate on the casing stub. After plugging, all equipment and debris would be removed, and the site would be restored as near as reasonably possible to its original condition. A dry hole marker is often placed at the surface to identify the well location. If the surface owner prefers, the marker may be buried. Any new roads not needed for other purposes would be reclaimed.

It is estimated that 4–6 exploratory wells would be drilled under all alternatives.

## **Geothermal Power Plant Development**

Although not expected, a 24-megawatt power plant could be constructed within the Powell Buttes area under all alternatives during the life of this plan. It is anticipated that the developed geothermal resource would be water dominated and that the geothermal power conversion system would be either single or double flash, or binary cycle. Before geothermal development could occur, site-specific baseline studies and environmental analyses, with public involvement, would be done. The scenario below describes the level of disturbance that would likely occur from the development of a 24 megawatt power plant: Five to seven production wells and one or two injection wells would be drilled. It is anticipated that access would be provided by existing roads, and the construction of short (0.5 to 1-mile long) roads with a surface of 18 to 20 feet wide, totaling up to 40 feet wide with ditches, cuts, and fills. Surface disturbance from well pad and road construction would probably range from 2 to 6 acres per well. The power plant facility, including separators, energy converters, turbines, generators, condensers, cooling towers, and switchyard, would involve an estimated 5 to 10 acres. Pipelines and powerlines would disturb an additional 3 to 6 acres. If a water cooling system is employed, one to three water wells, requiring about 0.25 acre per well, would be drilled, unless the cooling water was obtained from the geothermal steam condensate. Depending upon location, terrain, geothermal reservoir characteristics, and type of generating facility, total surface disturbance for a 24 megawatt (gross) geothermal power plant, and ancillary structures, would probably range from about 25 to 75 acres, or about 1 to 3 acres per megawatt. After construction, approximately one-third to one-half of the disturbed area would be revegetated. Prior to abandonment, 30–50 years later, the remaining disturbed area would be reclaimed.

## **Direct Use of Geothermal Energy**

Low- and moderate-temperature (50–300 degrees F) geothermal resources have many direct use applications. Direct applications and potential development scenarios include space heating and cooling of residences and businesses, applications in agriculture, aquaculture, and industry, and recreational and therapeutical bathing. Depending upon the type of use and magnitude of the operation, surface disturbance could range from a few acres for a well and greenhouses or food processing facilities to tens of acres for larger agricultural or aquacultural developments. It is anticipated that two wells would be drilled to heat one greenhouse operation or some of the residential areas near Powell Buttes under all alternatives during the life of this plan.

## **Locatable Mineral Resources**

### **Reasonably Foreseeable Exploration and Development Scenarios**

#### **Future Trends and Assumptions**

Reclamation science would continue to advance due to experience and research. More detailed design effort would be placed on the reclamation of mined lands in the future. This would result in an overall increase in reclamation costs but those costs would pay dividends in the long-term with increased reclamation success.

The economics of mining in the planning area would be driven by the relationship between production costs and the market price of the commodity. While production costs can be controlled or anticipated through management and technology, the price of mineral commodities (especially of gold) could vary widely. The overall profitability of an operation (and hence the level of activity at the prospecting, exploration, and mining phases for development of ore bodies) would be closely related to the price of the mineral commodity.

No chemical heap-leaching operations are forecasted during the plan period. If such an operation is proposed during the life of the plan, it would be subjected to environmental review under a plan of operations pursuant to regulations found in 43 CFR 3809.

#### **Casual Use, Notices, Plans of Operations, Use and Occupancy**

There are 3 levels of use defined by the 43 CFR 3809 regulations—casual, notice, and plan of operations. Generally, casual use means activities resulting in negligible, if any, disturbance of public lands or resources. Mechanized earth-moving equipment or truck-mounted drills are not allowed under casual use. Notice-level operations involve surface-disturbing exploration operations of 5 acres or less. Casual use and notice-level operations do not involve Federal actions that require compliance with NEPA. A plan of operations is required for all non-exploration mining activity that is not casual use, regardless of the number of acres disturbed. A plan is also required for all exploration activities that disturb over 5 acres, bulk sampling which will remove 1,000 tons or more of presumed ore for testing, or for any surface-disturbing operations greater than casual use in certain SMAs and lands/waters that contain federally-proposed or listed T&E species or their proposed or designated critical habitat. The approval of plans of operation is a Federal action that requires NEPA compliance. Mining claim occupancy associated with notice- or plan-level operations, also requires compliance with NEPA.

Details of plan of operations filing and processing requirements can be found in 43 CFR 3809.400. Generally, plans must include a detailed description of all operations, including a map showing all areas to be disturbed by mining, processing, and access, all equipment that would be used, periods of use, and any necessary buildings or structures. A detailed reclamation plan to meet the standards found in 43 CFR 3809.420, and a monitoring plan to monitor the effect of operations are also required. An interim management plan showing how the project area would be managed during periods of temporary closure to prevent unnecessary and undue degradation must also be submitted. The operator also must submit a reclamation cost estimate. The BLM may require operational and baseline environmental information, and any other information, needed to ensure that operations will not cause unnecessary and undue degradation.

When a plan of operations is received, BLM would review it to make sure that it is complete. Where necessary, the BLM would consult with the State to ensure operations would be consistent with State water quality requirements. In addition, the BLM would conduct any consultation required under the “National Historic Preservation Act” or

“Endangered Species Act.” Onsite visits would be scheduled when necessary. BLM could require changes to the plan of operations to ensure that the performance standards found in 43 CFR 3809.420 would be met, and that no unnecessary or undue degradation of lands or resources would occur. In addition, site specific mitigating measures would be imposed when necessary. A financial guarantee covering the estimated cost of reclamation, as if BLM were to contract with a third-party, would have to be provided before operations could begin. The financial guarantee would have to be sufficient not only to cover costs of reclamation, but also costs associated with interim stabilization and compliance with Federal, state, and local environmental requirements while third-party contracts would be developed and executed.

BLM approval is necessary to occupy public land for more than 14 calendar days in any 90-day period within a 25-mile radius of the initially occupied site. Details for the submittal and approval of use and occupancy are contained in 43 CFR 3710. As defined in these regulations, occupancy means full or part-time residence on the public lands. It also means activities that involve residence; the construction, presence, or maintenance of temporary or permanent structures that may be used for such purposes; or the use of a watchman or caretaker for the purpose of monitoring activities. Residence or structures include, but are not limited to, tents, motor homes, trailers, campers, cabins, houses, buildings, and storage of equipment or supplies. Also included are fences, gates, and signs intended to restrict public access.

Permanent structure means a structure fixed to the ground by any of the various types of foundations, slabs, piers, or poles, or other means allowed by building codes. The term also includes a structure placed on the ground that lacks foundations, slabs, piers, or poles, and that can only be moved through disassembly into its component parts or by techniques commonly used in house moving. The term does not apply to tents or lean-tos.

The disposal of sewage and gray-water would be subject to the rules and regulations of the ODEQ. The disposal of garbage and other debris would be subject to all appropriate local, state, and Federal rules and regulations. Likewise, the drilling of any water wells would be subject to all ODWR requirements. Permanent structures would be subject to all state and county permitting. Copies of all required local and state approvals and permits would be filed with the BLM prior to allowing any occupancy.

### **Background on the Development of a Locatable Minerals Mine**

The development of a mine from exploration to production can be divided into four stages. Each stage requires the application of more discriminating (and more expensive) techniques over a successively smaller land area to identify, develop, and produce an economic mineral deposit. A full sequence of developing a mineral project involves reconnaissance, prospecting, exploration, and mine development.

**Reconnaissance:** Reconnaissance-level activity is the first stage in exploring for a mineral deposit. This activity involves initial literature search of an area of interest, using available references such as publications, reports, maps, aerial photos, etc. The area of study can vary from hundreds to thousands of square miles. Activity that would normally take place includes large scale mapping, regional geochemical and geophysical studies, and remote sensing with aerial photography or satellite imagery. These studies are usually undertaken by academic or government entities, or major corporations. The type of surface-disturbing activity associated with reconnaissance-level mineral inventory is usually no more than occasional stream sediment, soil, and rock sampling. Minor off-road vehicle use could be required.

**Prospecting:** A prospecting area is identified when reconnaissance reveals anomalous geochemical or geophysical readings, a unique geologic structure or feature, or the

occurrence of typical mineral bearing formations. Historical references to mineralization can also lead to the identification of a prospecting area. This area could range from a single square mile to an entire mountain range of several hundred square miles.

Activity that would take place in an effort to locate a mineral prospect includes more detailed mapping, sampling, geochemical and geophysical study programs. Also, this is the time when property acquisition efforts usually begin and most mining claims are located in order to secure ground while trying to make a mineral discovery. Prospecting on an annual basis is considered a minimum requirement under the mining laws to secure a claim.

Types of surface disturbing activity associated with prospecting would involve more intense soil and rock chip sampling using mostly hand tools, frequent off-road vehicle use, and placement and maintenance of mining claim monuments. This activity is normally considered "casual use" (43 CFR 3809.5) and does not require BLM notification or approval.

Exploration: Upon location of a sufficiently anomalous mineral occurrence, or favorable occurrence indicator, a mineral prospect is established and is subjected to more intense evaluation through exploration techniques. Activities that take place during exploration include those utilized during prospecting but at a more intense level in a smaller area. In addition, activities such as road building, trenching, and drilling are conducted. In later stages of exploration, an exploratory adit or shaft may be driven. If the prospect already has underground workings these may be sampled, drilled, or extended. Exploration activities utilize mechanized earth-moving equipment, drill rigs, etc., and may involve the use of explosives.

Typical exploration projects in the planning area could include: in-stream dredging with portable suction dredges, exploratory drilling which could include construction of new roads, use of explosives to sample rock outcroppings, and excavation of test pits. If the exploration project disturbs 5 acres or less, it is conducted under a notice (43 CFR 3809.301) which requires the operator to notify BLM 15 days before beginning the activity. A copy of each notice received is sent to the Oregon Department of Geology and Mineral Industries (DOGAMI) for their review. If the project disturbs more than 5 acres, it is conducted under a plan of operations (43 CFR 3809.401) and requires NEPA compliance before approval.

Mine Development: If exploration results show that an economically viable mineral deposit is present, activity would intensify to obtain detailed knowledge regarding reserves, possible mining methods, and mineral processing requirements. This would involve applying all the previously utilized exploration tools in a more intense effort. Once enough information is acquired, a feasibility study would be made to decide whether to proceed with mine development and what mining and ore processing methods would be utilized.

Once the decision to develop the property is made, the mine permitting process begins. Upon approval, work begins on development of the mine infrastructure. This includes construction of the mill, offices, and laboratory; driving of development workings if the property is to be underground mined, or prestripping if it is to be open pit mined; and building of access roads or haulage routes, and placement of utility services. During this time additional refinement of ore reserves is made.

Once enough facilities are in place, actual mine production begins. Concurrent with production there often are "satellite" exploration efforts to expand the mine's reserve base and extend the project life. Reclamation of the property is conducted concurrently

with, or upon completion of, the mining operation. Often subeconomic resources remain unmined and the property is dormant, waiting for changes in commodity price or production technology that would make these resources economic.

Activities that occur on these lands include: actual mining, ore processing, tailings disposal, waste rock placement, solution processing, metal refining, and placement of support facilities such as repair shops, labs, and offices. Such activities involve the use of heavy earthmoving equipment and explosives for mining and materials handling, exploration equipment for refinement of the ore reserve base, hazardous or dangerous reagents for processing requirements, and general construction activities.

The size of mines varies greatly and not all mines would require all the previously mentioned facilities and equipment. Acreage involved can range from less than 5 acres to several hundred. Any mining that involves greater than casual use, regardless of the number of acres, requires the submittal of a plan of operations, and appropriate NEPA analysis, under 43 CFR 3809.401 and .411.

### **Diatomite**

Diatomite was mined by the open pit method a few miles west of Terrebonne in the 1950s and continued until the reserves were depleted (Orr and others, 1992). Currently, there are 20 mining claims for diatomite on adjoining lands administered by the BLM. No notices or plans of operation have been filed for these claims. If diatomite is produced from adjacent BLM-administered lands, up to several hundred acres of ground disturbance could result. However, such large scale developments of diatomite are not expected during the life of this plan. Any development for production would require a plan of operations and compliance with NEPA.

### **Mercury**

Minor amounts of mercury have been produced from the Clarno Formation in the southeastern part of the planning area. Prospecting began in the late 1920s and by the late 1950s, the US Bureau of Mines had recorded 30 flasks of total mercury production from the Platner and Oronogo mines, though the actual output was probably larger (Brooks, 1963). No claims presently exist for mercury within the planning area. Any development for production would require a plan of operations and compliance with NEPA.

## **Salable Mineral Resources**

### **Reasonably Foreseeable Exploration and Development Scenarios**

#### **Future Trends and Assumptions**

It is assumed that the demand for mineral materials will continue to increase in conjunction with the population growth in central Oregon. The mineral material supply from existing private and public sources in the planning area appears to exceed the foreseeable demand over the next 20 years. However, based on the distribution of public and private ownership, ODOT is not able to consistently offer a public mineral material source for its construction projects in order to increase bidder competition (ODOT, 1998). Owing to the existing supply and the distribution of ODOT's prospective mineral material sites across the planning area, it is assumed that 3-4 new mineral material sites will be developed in the next 20 years.

The development and reclamation of mineral material sites would be subject to the Guidelines for Development of Salable Mineral Materials section (in this Appendix).

## **Rock Quarry, Sand/Gravel/Cinder Pit Development**

Existing material sites disturb approximately 15–20 acres of land each. This acreage is necessary for the mine itself, rock crushing operations, truck-turn around areas, access trails for bulldozers and drills, overburden stockpile sites, and aggregate stockpile areas. For access to a new quarry site, approximately 0.5 acre of land would be disturbed by new road construction.

It is expected that the existing mineral materials sites in this area would be utilized intermittently throughout the planning period and that 3-4 new sites would be developed. Any development of a new site or expansion of an existing pit that causes surface disturbance beyond previously inventoried limits would require resource inventories, site-specific NEPA compliance, and development and reclamation plans.

After all useable material is removed from existing and future mineral material sites, reclamation work would be conducted according to an approved interdisciplinary plan. Upon depletion, reclamation work would be conducted on the material sites as well as on all unneeded access roads and trails. Oversized rock would be put back into the quarries or pits and where possible, cutslopes would be graded to conform to the existing topography. Stockpiled topsoil would be spread over sideslopes and floors, and seeded as directed by BLM. Access roads and trails would be graded for proper drainage, scarified and seeded.

## **Decorative Stone**

It is anticipated that the Prineville District Office would receive 10-20 sale requests per year for decorative stone, such as slab lava and rhyolite lava. At this time, there are no designated areas for which sales contracts or free use permits are issued for decorative stone; sales contracts and free use permits are only available for cinder and pit run gravel. However, one or more areas may be designated for decorative rock gathering during the life of this plan. Prior to designation and prior to any road or trail construction, appropriate inventories and NEPA compliance would be conducted to prevent unnecessary and undue degradation. Reclamation plans would be developed for any designated collecting areas and their access roads and trails. In most cases, existing roads would provide access to areas where the stone is scattered on the surface. In these areas, the rock would be hand-picked and loaded directly onto pick-ups or flatbed trucks, or onto pallets and then loaded onto trucks. There would be both on and off-road vehicle travel. There is a possibility that temporary road or trail construction could be necessary to gain access in some areas.

# **Stipulations and Guidelines for Mineral Operations**

The following are mineral leasing stipulations, and guidelines for locatable and salable mineral operations. The special stipulations may be used on a site-specific basis. Their use and details such as dates and buffer sizes may vary through the alternatives. The locatable mineral surface management guidelines and the salable mineral guidelines would apply throughout the alternatives.

# Leasing Stipulations

## Standard Leasing Terms

Standard leasing terms for oil and gas are listed in Section 6 of Offer to Lease and Lease for Oil and Gas Form 3100-11. They are:

Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air and water, to cultural, biological, visual and other resources, and to other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section. To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. Lessor reserves the right to continue existing uses and to authorize future uses upon or in the leased lands, including the approval of easements or rights-of-way. Such uses shall be conditioned so as to prevent unnecessary or unreasonable interference with rights of lessee.

Prior to disturbing the surface of the leased lands, lessee shall contact BLM to be apprised of procedures to be followed and modifications or reclamation measures that may be necessary. Areas to be disturbed may require inventories or special studies to determine the extent of impacts to other resources. Lessee may be required to complete minor inventories or short-term special studies under guidelines provided by lessor. If in the conduct of operations, T&E species, objects of historic or scientific interest, or substantial unanticipated environmental effects are observed, lessee shall immediately contact lessor. Lessee shall cease any operations that would result in the destruction of such species or objects until appropriate steps have been taken to protect the site or recover the resources as determined by BLM in consultation with other appropriate agencies.

Standard terms for geothermal leasing can be found on Offer to Lease and Lease for Geothermal Resources (Form 3200-24), Section 6, and are very similar to those described above for oil and gas leasing.

Powersite Stipulation (Form No. 3730-1) is to be used on all lands within powersite reservations.

## Special Leasing Stipulations

The following special stipulations are to be utilized on specifically designated tracts of land as described under the various alternatives.

### **Recreation, Motorized Travel, and Visual Resources**

A 30-day public notice period may be required prior to exception, modification, or waiver of recreation, motorized travel, and visual resource stipulations.

**Resource:** Designated recreation sites including, but not limited to campgrounds, OHV staging areas, and OHV play areas (CTA 2-7)

*Stipulation:* Surface occupancy and use is prohibited within developed recreation sites.

*Objective:* To protect developed recreation sites.

*Exception:* An exception to this stipulation may be granted by the authorized officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be mitigated adequately.

*Modification:* The boundaries of the stipulated area may be modified by the authorized officer if the recreation site boundaries are changed.

*Waiver:* This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains designated recreation areas.

**Resource—Motorized Travel (varies by alternative)**

*Stipulation:* Access, travel, and drill site construction will be limited in areas where motorized use is restricted. Areas classified as limited to existing roads and trails or designated roads and trails will limit access for mining activities to just those roads that are open under the designation. Access will not be allowed in areas closed to motorized vehicle use.

*Objective:* To protect important scenic and wildlife resources, and to enhance primitive recreational opportunities.

*Exception:* An exception to this stipulation may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action are acceptable or can be mitigated adequately.

*Modification:* The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the resource values.

*Waiver:* This stipulation may be waived if the motorized vehicle closure is lifted. A 30-day public notice period will be required prior to exception, modification, or waiver of this stipulation.

**Resource—VRM Class I (Common to Alternatives 2-7)**

*Stipulation:* Surface occupancy is prohibited in VRM Class I areas.

*Objective:* To preserve the existing character of the landscape.

*Exception:* None

*Modification:* None

*Waiver:* None

No exceptions, modifications, or waivers may occur because all VRM Class I lands within the planning area are in WSAs, which are already closed to mineral leasing (43 CFR Subparts 3800.0-3 and 3201.11).

**Resource—VRM Class II (Common to Alternatives 2-7)**

*Stipulation:* All surface-disturbing activities, semi-permanent and permanent facilities in VRM Class II areas may require special design including location, painting and camouflage to blend with the natural surroundings and meet the visual quality objectives for the area.

*Objective:* To control the visual impacts of activities and facilities within acceptable levels.

*Exception:* None.

*Modification:* None.

*Waiver:* This stipulation may be waived if the authorized officer determines that there are no longer VRM Class II areas in the leasehold.

## Wildlife

**Resource**—Raptor nest sites including but not limited to Bald Eagle, Golden Eagle, Northern Goshawk, Coopers Hawk, and Great Grey Owl nests (Common to Alternatives 2-7, see Table 2A).

*Stipulation:* Surface occupancy and use is prohibited in the spatial buffers during the dates shown for each raptor species in Table 2A.

*Objective:* To protect raptor nest sites.

*Exception:* An exception may be granted by the authorized officer if the operator submits a plan which demonstrates that the proposed action will not adversely affect the bird or its nest site.

*Modification:* The boundaries of the stipulated area may be modified if the authorized officer determines that a portion of the area can be occupied without adversely affecting the species or its nest site.

*Waiver:* This stipulation may be waived if the authorized officer determines that there is no longer raptor nesting habitat on the leasehold. Consultation with the ODFW will be required prior to exception, modification, or waiver of this stipulation.

**Resource**—Deer, elk, and pronghorn winter range (emphasis on winter range varies by alternative).

*Stipulation:* Surface use is prohibited during the times listed in Table 2A within crucial deer, elk, and pronghorn winter range. This stipulation does not apply to the operation or maintenance of production facilities.

*Objective:* To protect deer, elk, and pronghorn winter range from disturbance during the winter use season and to facilitate long-term maintenance of deer/elk/pronghorn populations.

*Exception:* An exception to this stipulation may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action are acceptable or can be mitigated adequately.

*Modification:* The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain crucial winter range. This stipulation can be expanded to cover additional portions of the lease if additional crucial habitat areas are identified, or if habitat use areas change. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates in Table 2A are not valid for the leasehold.

*Waiver:* This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains crucial winter range. Consultation with the ODFW will be required prior to exception, modification, or waiver of this stipulation.

**Resource**—Sage-grouse lek sites (Common to Alternatives 2-7)

*Stipulation:* Surface occupancy and use is prohibited within 0.6 miles of known sage-grouse lek sites.

*Objective:* To protect sage-grouse lek sites.

*Exception:* An exception may be granted by the authorized officer if the operator submits a plan which demonstrates that the proposed action will not affect the sage-grouse or its lek site.

*Modification:* The boundaries of the stipulated area may be modified if the authorized officer determines that a portion of the area can be occupied without adversely affecting the sage grouse or its lek site.

*Waiver:* This stipulation may be waived if the authorized officer determines that there is no longer a lek site on the leasehold.

*Note:* There are no standardized closures to surface occupancy and use in sage grouse nesting, brooding/rearing, or winter habitat areas. However, restrictions (including seasonal closures to surface use) could apply and would be determined by site-specific analyses.

## **Areas of Critical Environmental Concern/Special Management Areas**

**Resource**—ACECs (varies by alternative).

*Stipulation:* Surface occupancy is prohibited within all ACECs.

*Objective:* To protect natural processes and historic, cultural, scenic, fisheries, and wildlife resources.

*Exception:* An exception to this stipulation may be granted by the authorized officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be mitigated adequately.

*Modification:* The boundaries of the stipulated area may be modified if the ACEC boundaries are modified.

*Waiver:* This stipulation may be waived if the ACEC designation is lifted.

A 30-day public notice period will be required prior to exception, modification, or waiver of this stipulation.

# Guidelines for Locatable Minerals Surface Management

## 43 CFR 3809—Standards for Exploration, Mining, and Reclamation

The following operational guidelines for mining activities have been compiled to assist the miner in complying with the 43 CFR 3809 regulations, which apply to all mining operations on BLM-administered lands. The manner in which the necessary work is to be done will be site specific and all of the following standards may not apply to each mining operation. It is the mining claimant's and operator's responsibility to avoid "unnecessary or undue degradation" and they must perform all necessary reclamation work. Refer to 43 CFR 3809 regulations for general requirements and performance standards. The BLM will provide site-specific guidelines for some mining proposals.

Operations in WSAs are regulated under 43 CFR 3802 and the wilderness IMP. WSAs are technically open to mineral location, but are severely restricted by the wilderness IMP's "no reclamation" standard.

### Construction and Mining

**Vegetation removal:** Remove only that vegetation which is in the way of mining activities. Merchantable timber must be marked by BLM prior to cutting, and may not be used for firewood. It is recommended that small trees (less than 6 inches diameter at breast height [dbh]) and shrubs are to be lopped and scattered, or shredded for use as mulch. Trees over 12 inches dbh should be bucked and stacked in an accessible location unless they are needed for the mining operation.

**Firewood:** Firewood may not be cut and sold, or used off of the mining claims.

**Topsoil:** All excavations should have all productive topsoil (usually the top 6 to 18 inches) first stripped, stockpiled, and protected from erosion for use in future reclamation. This also includes removal of topsoil before the establishment of mining waste dumps and tailings ponds if the waste material will be left in place during reclamation.

**Roads:** Existing roads and trails should be used as much as possible. Temporary roads are to be constructed to a minimum width and with minimum cuts and fills. All roads shall be constructed so as not to negatively impact slope stability. Access may be limited in some areas by off-highway vehicle restrictions.

**Water quality:** When mining will be in or near bodies of water, or sediment will be discharged, contact the ODEQ and U.S. Army Corps of Engineers. It is the operator's responsibility to obtain any needed suction dredging, streambed alteration, or water discharge permits required by Federal or state agencies. Copies of such permits shall be provided to the resource area manager if a notice or plan of operations is filed.

**Claim monuments:** Due to the history of small wildlife deaths, plastic pipe is no longer allowed for claim staking pursuant to state law. It is recommended that existing plastic pipe monuments have all openings permanently closed. Upon loss or abandonment of the claim, all plastic pipe must be removed from the public lands, and when old markers are replaced during normal claim maintenance, they are to be either wood posts or stone or earth mounds, consistent with state law.

**Drill sites:** Exploratory drill sites should be located near or adjacent to existing roads when possible without blocking public access. When drill sites must be constructed, the size of the disturbance shall be as small as possible in order to conduct drilling operations.

**Dust and erosion control:** While in operation, and during periods of temporary shut-down, exposed ground surfaces susceptible to erosion will need to be protected. This can be accomplished with seeding, mulching, installation of water diversions, and routine watering of dust producing surfaces.

**Fire safety:** All State fire regulations must be followed, including obtaining a campfire permit or blasting permit if needed. All internal combustion engines must be equipped with approved spark arresters.

**Safety and public exclusion:** The general public may not be excluded from the mining claim. In the interest of safety, the general public can be restricted only from specific dangerous areas (underground mines, open pits, or heavy equipment) by erecting fences, gates and warning signs. It is the operator's responsibility to protect the public from mining hazards. Gates or road blocks may be installed on existing or proposed roads only with the approval of the resource area manager.

**Occupancy:** All structures/trailers on mining claims must be used for mining purposes (must be reasonably incident to mining) and should be covered by a notice or plan of operation. Use of such a structure for residential purposes not related to mining or for recreation is not authorized.

**Suction dredging:** Filing either notice or plan of operations is required on all suction dredge operations. The operator must have the applicable ODEQ suction dredge permit prior to starting work, and a copy should be submitted to the resource area manager.

**Tailings ponds:** Settling ponds must be used to contain fines and any discharge into creeks must meet the ODEQ standards.

**Trash and garbage:** Trash, garbage, used oil, etc. must be removed from public land and disposed of properly. Do not bury any trash, garbage, or hazardous wastes on public lands. Accumulations of trash, debris, or inoperable equipment on public lands are viewed as unnecessary degradation and will not be tolerated.

**Cultural and paleontological resources:** Operators shall not knowingly alter, injure, or destroy any scientifically important paleontological (fossil) remains or any historical or archaeological site, structure, or object on Federal lands. The operator shall immediately bring to the attention of the resource area manager, any paleontological (fossil) remains or any historical or archaeological site, structure, or object that might be altered or destroyed by exploration or mining operations, and shall leave such discovery intact until told to proceed by the resource area manager. The resource area manager shall evaluate the discovery, take action to protect or remove the resource, and allow operations to proceed within 10 working days.

**Threatened and endangered species of plants/ animals:** Operators shall take such action as may be needed to prevent adverse impacts to T&E species of plants and animals and their habitat which may be affected by operations. Special status species (Federal candidate/Bureau sensitive) of plants and animals, and their habitat, will be identified by the resource area manager, and shall be avoided wherever possible.

**Areas of Critical Environmental Concern:** Operators are required to prepare and have the BLM approve a plan of operations prior to conducting mining activities within ACECs. The plan of operations would specifically need to address methods to mitigate

impacts to those relevant and important resource values for which the ACEC was designated.

**Suitable Wild and Scenic Rivers:** Areas within 0.25 mile of rivers recommended suitable as a wild river under the “Wild and Scenic Rivers Act,” are closed to new mineral location. Mining activity occurring at the time of congressional designation would be allowed to continue, but must be conducted in a manner that minimizes surface disturbance, sedimentation, pollution, and visual impacts. Areas recommended as either scenic or recreational under the “Wild and Scenic Rivers Act” would allow new and existing mineral location to occur, but it must be conducted in a manner that minimizes surface disturbance, sedimentation, pollution, and visual impacts.

## Reclamation

Reclamation of all disturbed areas must be performed concurrently with mining, or as soon as possible after mining permanently ceases. Reclamation shall include, but shall not be limited to: (1) saving of topsoil for final application after reshaping of disturbed areas has been completed; (2) measures to control erosion, landslides, and water runoff; (3) measures to isolate, remove, or control toxic materials; (4) reshaping the area disturbed, application of topsoil, and revegetation of disturbed areas, where reasonably practicable; and (5) rehabilitation of fisheries and wildlife habitat. When reclamation of the disturbed area has been completed, except to the extent necessary to preserve evidence of mineralization, the resource area manager must be notified so that inspection of the area can be made.

**Equipment and debris:** All mining equipment, vehicles, structures, debris, and trash must be removed from the public lands during periods of non-operation and/or at the conclusion of mining, unless authorization from the resource area manager is given to the operator or claimant in writing.

**Backfilling & recontouring:** The first steps in reclaiming a disturbed site are backfilling excavations and reducing high walls. Coarse rock material should be replaced first, followed by medium sized material, with fine materials to be placed on top. Recontouring means shaping the disturbed area so that it will blend in with the surrounding lands and minimize the possibility of erosion.

**Seedbed preparation:** Recontouring should include preparation of an adequate seedbed. This is accomplished by ripping or disking compacted soils to a depth of at least 6 inches in rocky areas and at least 12 inches in less rocky areas. This should be done following the contour of the land to limit erosion. All stockpiled settling pond fines, and then topsoil, are spread evenly over the disturbed areas.

**Fertilizer:** The resource area manager must be contacted to determine if fertilization will be necessary, and if so, the type and rate of application.

**Revegetation:** A resource area manager-approved revegetation prescription must be used to provide adequate revegetation for erosion control, wildlife habitat, and productive secondary uses of public lands.

**Mulch:** As directed by the resource area manager, during review of the notice or plan of operations, the disturbed area may require mulching during interim or final reclamation procedures. Depending on site conditions, the mulch may need to be punched, netted, or blown on with a tackifier to hold it in place. In some cases, erosion control blankets may be cost effective for use.

**Roads:** After mining is completed, all new roads shall be reclaimed, unless otherwise specified by the resource area manager. High wall and cutbanks are to be knocked down

or backfilled to blend with the surrounding landscape. Remove all culverts from drainage crossings and cut back the fill to the original channel. The roadbed should be ripped to a minimum depth of 12 inches to reduce compaction and provide a good seedbed. The road must then be fertilized and seeded if necessary. When necessary, waterbars are to be used to block access and provide drainage.

**Tailings ponds:** The ponds should be allowed to dry out and the fines removed and spread with the topsoil, unless the fines contain toxic materials. If the ponds contain toxic materials, a plan will be developed to identify, dispose, and mitigate effects of the toxic materials. If necessary, a monitoring plan will also be implemented. The ponds should then be backfilled and reclaimed.

# Guidelines for Development of Salable Mineral Materials

## Proposed Operations

All proposed pits and quarries, and any exploration that involves surface disturbance, are required to have operating and reclamation plans that must be approved by the resource area manager. All proposals will undergo the appropriate level of review and compliance with NEPA.

## Operating Procedures

Where practicable, the following requirements should be made a part of every contract or permit providing for the use of mineral material sites in the planning area:

- Oversized boulders shall not be wasted but shall be broken and utilized concurrently with the excavated material.
- The operator shall comply with local and state safety codes covering quarry operations, warning signs, and traffic control. All necessary permits must be obtained from state and county agencies.
- Use of the site for equipment storage and stockpiling rock material is allowed for the duration of the contract or permit. Use of the site beyond that time would be authorized under a special use permit.
- All topsoil shall be stockpiled or windrowed, as appropriate, for use in reclamation.
- Prior to abandonment, all material sites will be graded to conform with the surrounding topography. Oversize material that is not usable will be placed in the bottom of the pit and the pit would be filled, graded covered with topsoil. Reseeding, if necessary, will be done as prescribed by the resource area manager. Access roads no longer needed by the BLM will be abandoned and reclaimed as directed by the resource area manager.

## Quarry Design

Where in steep terrain in the operating area, quarry developments will require a series of benches to effectively maximize the amount of mineral materials to be removed in a safe manner. In most cases, bench height should not exceed 40 feet, and if the bench will be used by bulldozers to access other parts of the quarry, the width of the bench should be at least 25 feet. If the bench is not used by equipment, then this width can be reduced to approximately 10 feet.

Clearing of timber and brush should be planned at least 10 feet beyond the edge of the excavation limit. Most often the brush will be piled and burned at the site, or scattered nearby.

If at all possible, all topsoil and overburden should be stockpiled and saved for eventual quarry site reclamation. These piles may need to be stabilized by seeding in order to minimize erosion during the winter months. As a standard procedure, the excavation of the quarry floor should be designed with an outslope of approximately 3 percent in order to provide for adequate drainage of the floor. Compliance with this design should be made a requirement of all operators at the site.